

LOWELL

The Building Book







LOWELL

The Building Book

prepared by:

City of Lowell
Division of Planning and Development
and

Anderson Notter Associates
Architects and Preservation Planners

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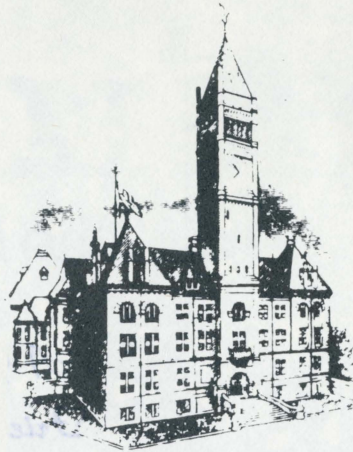
November 1978

Second Edition

Letter from the City Manager

WILLIAM S. TAUPIER
City Manager

ROBERT R. GILMAN
Asst. to City Manager



OFFICE OF THE CITY MANAGER
CITY HALL
LOWELL, MASSACHUSETTS
01852

To the Citizens of Lowell:

The primary goal of Lowell's Community Development Program is to strengthen our residential community and revitalize our commercial district. To achieve this, we have developed projects aimed at reinforcing and enhancing the City's man-made environs.

Community Development Block Grant funds have been allocated for the rehabilitation of residential and commercial structures. Additional funds have been spent or appropriated for complementary public street improvements. I view the commitment to improve the physical environment as an essential component of our overall economic development strategy and our efforts to gain national recognition as an Urban Cultural Park.

Lowell has a proud history and a strong architectural identity. It is encouraging to see a growing awareness and appreciation of the City on the local, state and federal levels. Despite the shortage of public funds to support building renovations, I am pleased to see how much has already been accomplished through private financing and I am hopeful that this trend will continue as faith and pride in the City continue to grow.

Toward this end, the City's Division of Planning and Development, with the assistance of Anderson Notter Associates, has prepared this booklet. "The Building Book" discusses the City's evolution from farm village to industrial capital of the world, then moves on to identify the basic building types which those 150 years of growth and expansion produced. Finally, and most importantly, the booklet offers helpful hints and suggestions to those interested not only in renovating their buildings but also in preserving the special features of those structures.

This booklet is not intended as a rule book, the information is in no way definitive, nor should it be considered a criticism of the many improvements already completed. The intent of this booklet is to **suggest and inform**. Remodeling is a highly personal effort and hopefully this booklet will illustrate the range of options open to property owners, while sensitizing all Lowellians to the vast potential and unique qualities of our man-made environment.

William S. Taupier
City Manager

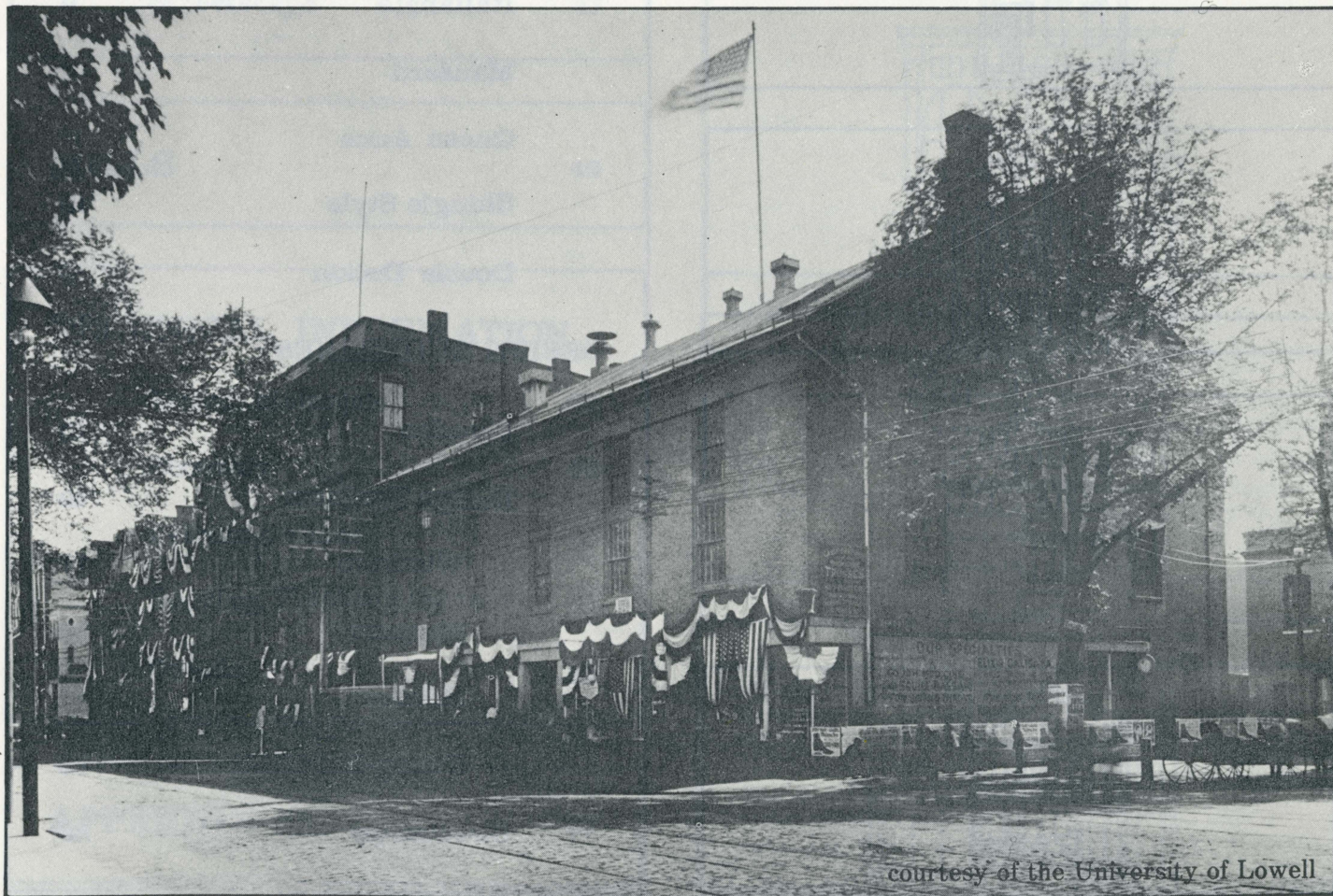
Introduction

Lately, a lot of people have been paying Lowell some handsome compliments. Did you know that the Commonwealth of Massachusetts has committed \$10 million to construct a State Heritage Park here? Not to be outdone, the Federal Government has established the Lowell National Historical Park to celebrate and interpret the American Industrial Revolution. The Lowell canal system has been designated as a National Historic site, while over 100 buildings throughout the City have been placed on the National Register of Historic Places. Grant money has been pouring in to document, study, renovate and reconstruct the City. Isn't it time Lowellians jumped on the bandwagon?

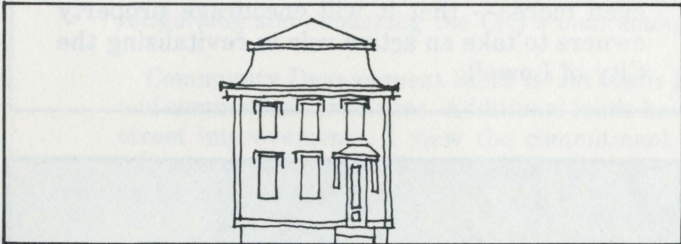
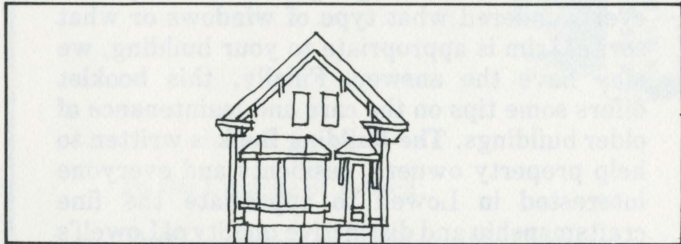
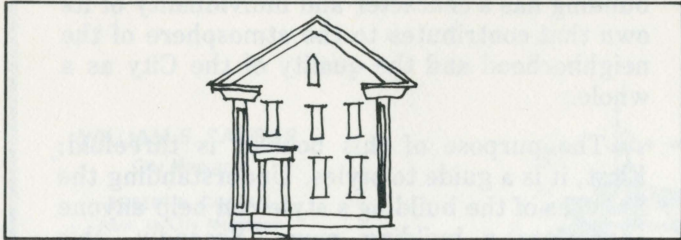
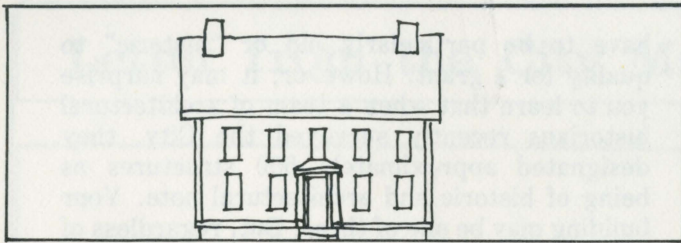
It's finally beginning to happen — the mill town is taking on a new image. Have you noticed anything different about downtown Lowell? The City has taken the initiative and committed \$1.4 million for public improvements in the downtown. To encourage private participation, the City is offering renovation grants to property owners. A building does not

have to be particularly old or "historic" to qualify for a grant. However, it may surprise you to learn that when a team of architectural historians recently surveyed the City, they designated approximately 500 structures as being of historic and architectural note. Your building may be one of these. But, regardless of when it was built or "who slept there," every building has a character and individuality of its own that contributes to the atmosphere of the neighborhood and the quality of the City as a whole.

The purpose of this booklet is threefold: First, it is a guide to styles. Understanding the features of the building's style can help anyone appreciate a building more. Secondly, this booklet provides design guidelines: If you've ever wondered what type of windows or what sort of trim is appropriate to your building, we may have the answer. Finally, this booklet offers some tips on the care and maintenance of older buildings. **The Building Book** is written to help property owners, residents and everyone interested in Lowell to appreciate the fine craftsmanship and distinctive quality of Lowell's buildings. We hope the booklet will accomplish even more — that it will encourage property owners to take an active role in revitalizing the City of Lowell.



courtesy of the University of Lowell



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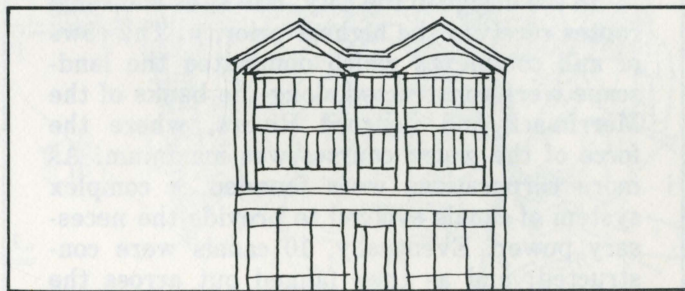
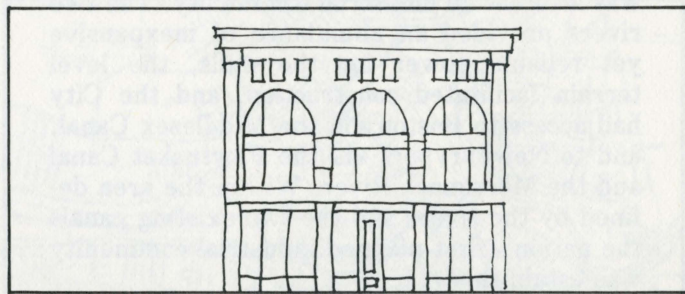
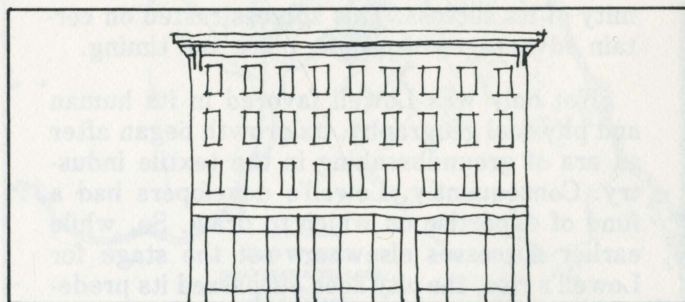
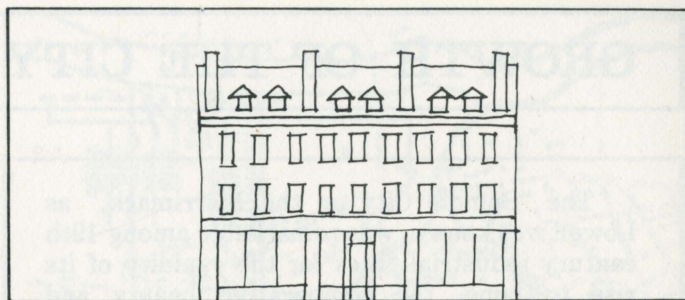
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GROWTH OF THE CITY

The "Spindle City on the Merrimack," as Lowell was known, was remarkable among 19th century industrial cities for the rapidity of its rise to fame, the comparative beauty and humaneness of its lifestyle, and the sheer enormity of its success. This success rested on certain advantages of people, place and timing.

Not only was Lowell favored in its human and physical geography, its growth began after an era of groundbreaking in the textile industry. Consequently, Lowell's developers had a fund of expertise on which to draw. So, while earlier successes elsewhere set the stage for Lowell's rise, the city soon surpassed its predecessors. By 1840, Lowell had become the principal manufacturing center of the United States and the model for many similar ventures. As the maps on the opposite page illustrate the transformation from rural hamlet to industrial mecca occurred in less than two decades. This was the most rapid industrialization process the country had yet experienced.

Lowell's situation at the confluence of the Merrimack and Concord Rivers contributed highly to its success — physically, the location was ideal for an industrial community. The two rivers provided an abundance of inexpensive yet reliable power for the mills, the level terrain facilitated construction, and the City had access to Boston via the Middlesex Canal, and to Newburyport via the Pawtucket Canal and the Merrimack River. Within the area defined by the rivers and the two existing canals the nation's first **planned** industrial community was established.

In the design of the City, mill sites and canal routes received the highest priority. The rows of mill complexes which dominated the landscape were constructed along the banks of the Merrimack and Concord Rivers, where the force of the water courses was maximum. As more corporations were founded, a complex system of canals evolved to provide the necessary power. Eventually, 10 canals were constructed; and as they fanned out across the landscape, they cut the City into seven islands. The rest of the community developed within the confines of the V-shaped wall formed by the mills. Here, behind the mills and along the canal courses, the corporations built their housing complexes and the business section of the city developed.

The expansion of the mill complexes during the 1830's-40's, resulted in the growth of a large

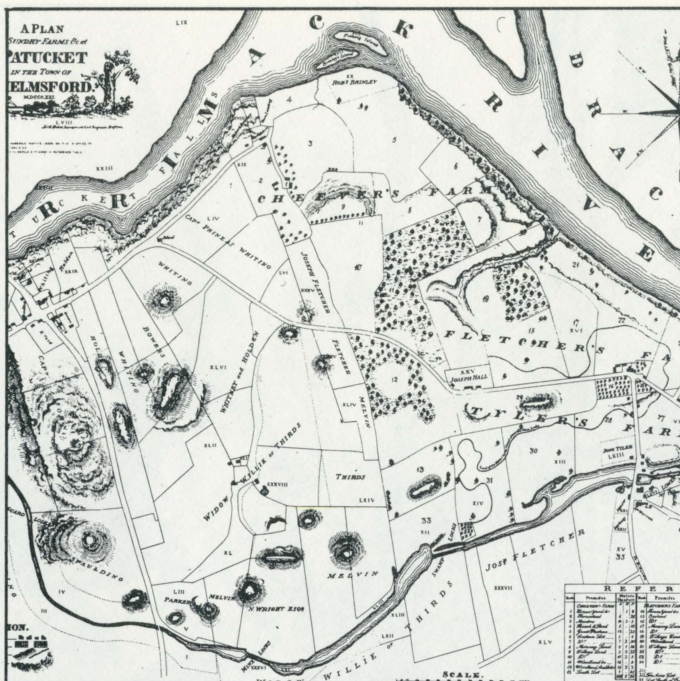
middle class who established themselves in three contiguous areas. Chapel Hill was the first neighborhood to develop. Next, the Lower Belvidere section was built up. In 1834, the remaining land above Nesmith Street was annexed to the City then sold to real estate developers for expensive residences during the 1840's. Centralville was settled next and annexed to Lowell in 1851. The last neighborhood to develop was Pawtucketville which became a part of Lowell in 1874.

As industrial output continued to expand, Lowell's immigrant population continued to grow. By the 1860's, the utopian industrial system could not keep pace with the very forces it had generated. As the 19th century progressed, conditions in corporation boarding houses became worse and worse. More privately financed residential buildings were constructed and the neighborhoods grew to their present size.

Shortly after the turn of the century, Lowell's status was diminished when the use of electric power became widespread. This decreased the need for hydro-electric power and the location of the City became less strategic. At the same time it became practical for many textile concerns to move south, where raw materials and labor were less expensive. For several decades the City's economy stagnated and the mills and canals fell into disrepair.

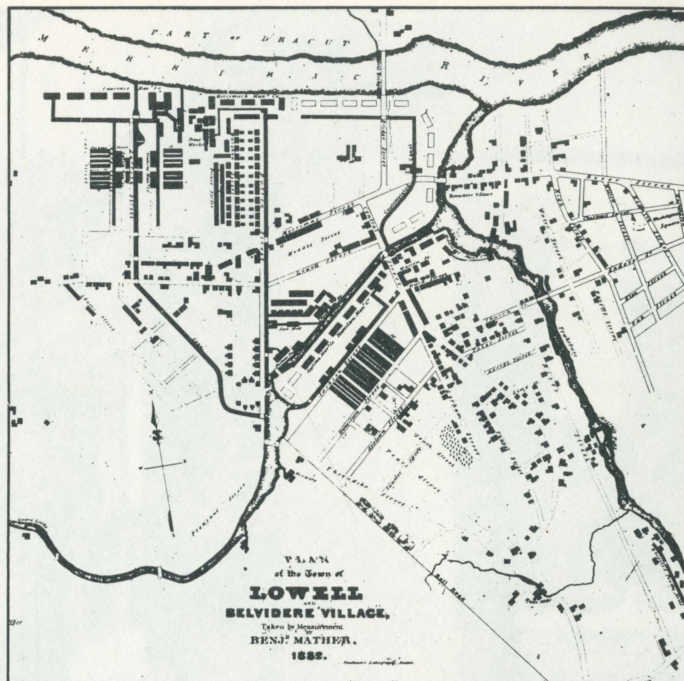
The history of Lowell describes the successes and the failures of the process of industrialization and two related trends — immigration and urbanization. These processes and their consequences — both positive and negative — are expressed in the present face of the City. With its canal system, its mills, 19th century vernacular architecture and flourishing ethnic neighborhoods, Lowell is today the most important illustration and the fullest expression of the American Industrial Revolution.

Recognizing the significance of Lowell's environs, the Federal and State governments both are planning to build cultural parks here. Together these projects establish the context and set both the tone and the pattern for Lowell's renewal. Both programs seek to revitalize Lowell and to preserve the City's heritage through adaptive re-use of its man-made environment. This booklet is a part of that strategy and hopefully will convince property owners to undertake building improvement projects which advance the themes associated with Lowell's history.



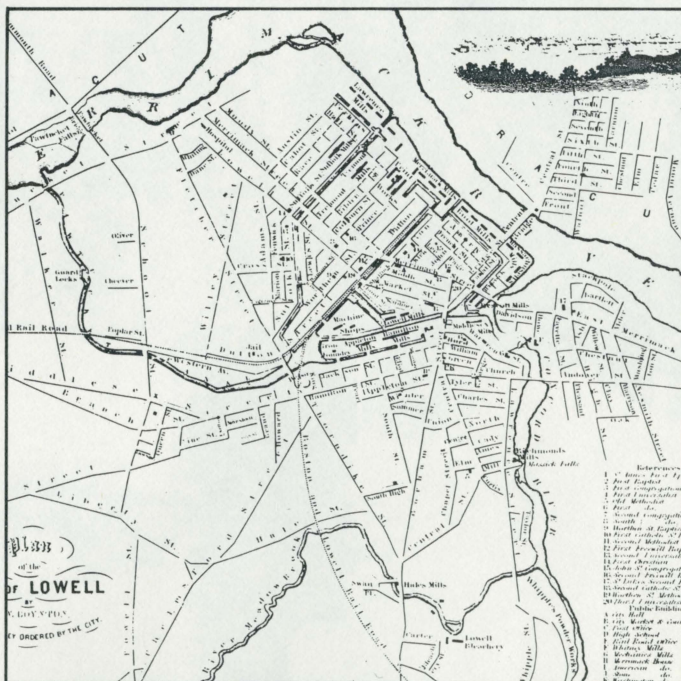
1821

Once known as East Chelmsford, Lowell was first settled in 1655 on six square miles of land near the confluence of the Merrimack and Concord Rivers. With the construction of the Pawtucket (1796) and Middlesex (1803) canals, East Chelmsford became a popular trading center but the town remained essentially rural until the 1820's.



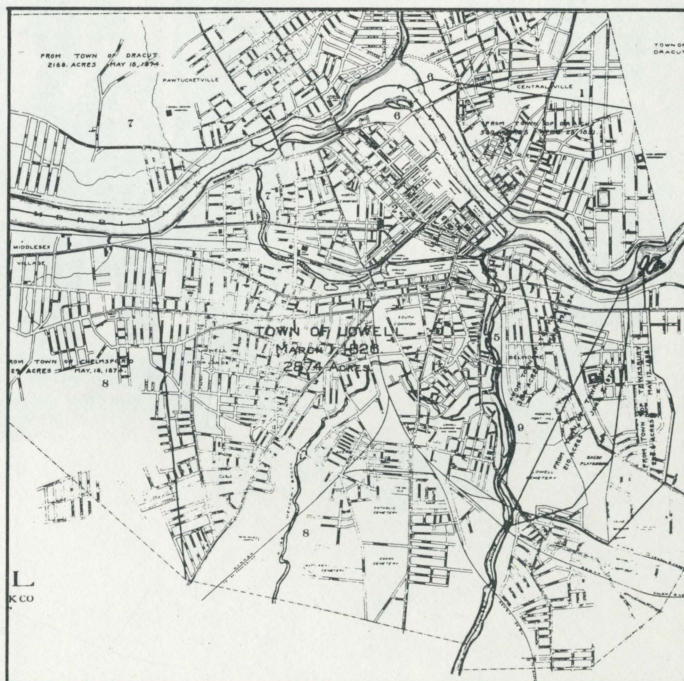
1832

Within twenty years, Francis Cabot Lowell and his associates transformed the rural community of East Chelmsford into an industrial empire. Large tracts of farm land were developed into mill complexes and a waterway network to power the mills was constructed; in 1826 the City was incorporated and by 1839 eleven corporations had located here.



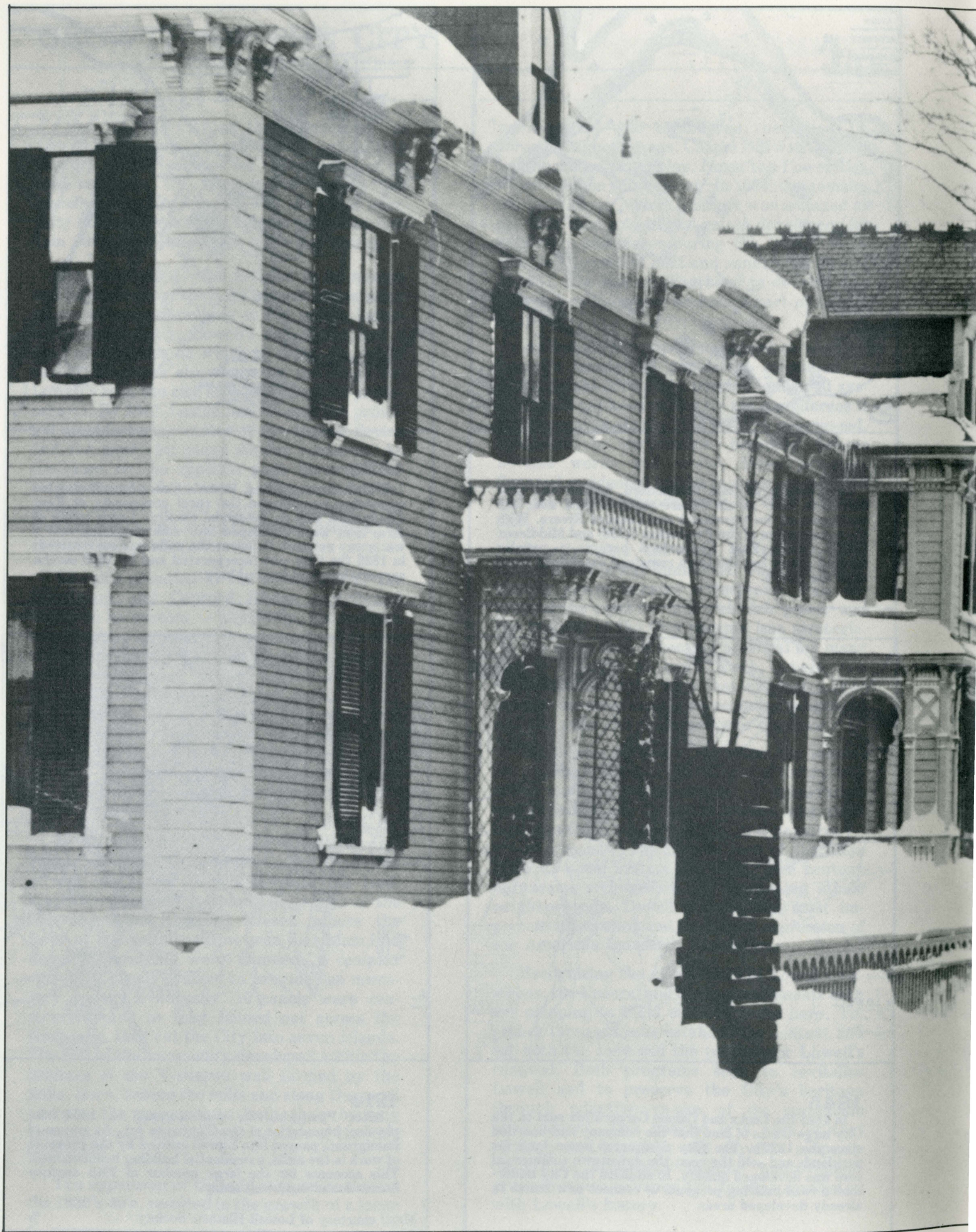
1845

In 1845 the Locks and Canals Corporation sold to the City large tracts of land that the company had hoarded since the 1820's. The City designated some land for parklands and sold the rest; the downtown commercial core was developed quickly. In addition the City undertook a road-building program to connect new tracts to already developed areas.



1914

After Pawtucketville was annexed in 1874, the physical boundaries of the City were set. As waves of immigrants poured into Lowell enticed by the prospect of work in the mills, a residential building boom ensued. This accounts for the large number of 19th century homes found in Lowell today.





Courtesy of the University of Lowell

HOUSES

ARCHITECTURAL STYLES

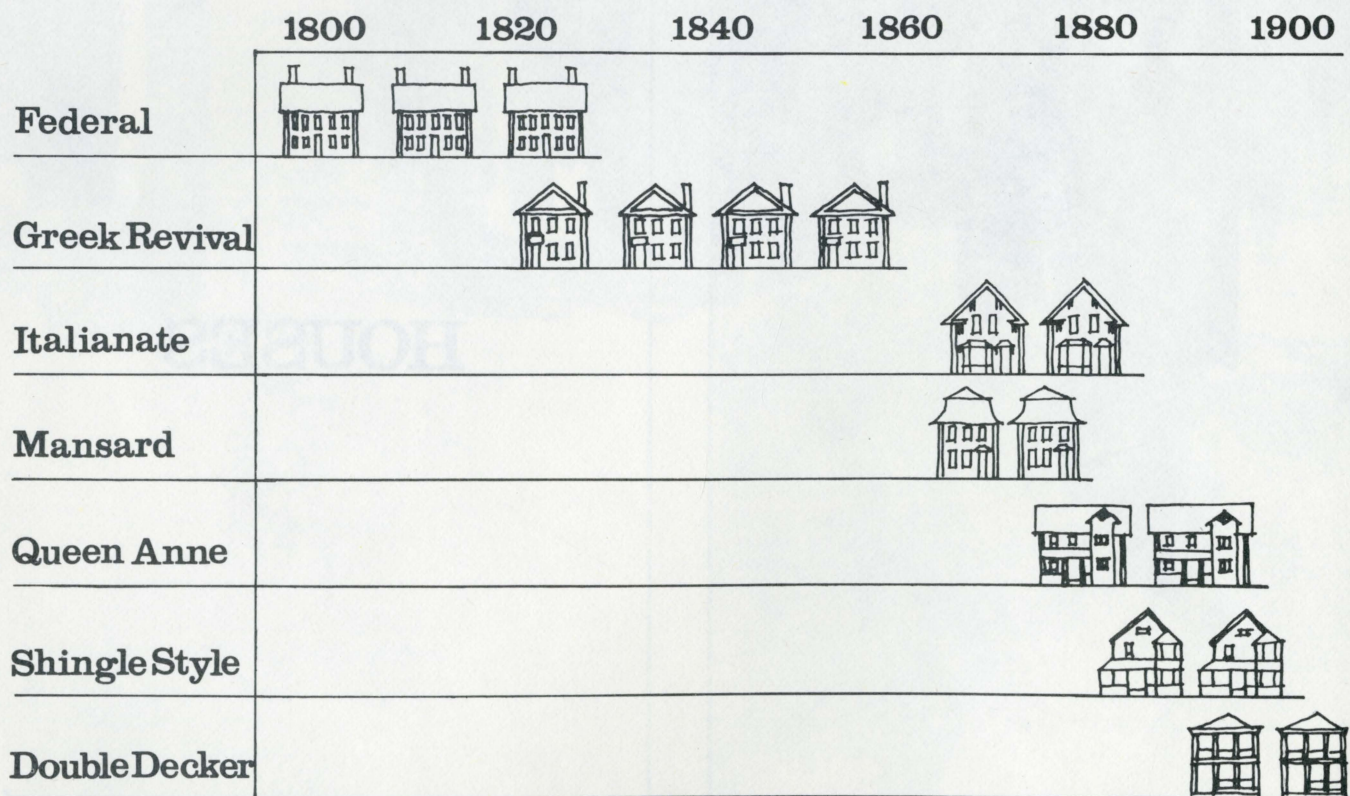
Lowell's many neighborhoods were settled at various times. Architectural style is often a key to the date and early use of a building and the original character of a neighborhood. During the 19th century, when many of Lowell's residences were built, most architectural styles first developed either in the prosperous mercantile cities of this country or in Europe. As styles took hold in larger cities such as Boston, local architects and master builders began incorporating characteristic features into the design of their buildings.

Generally historicism, or interest in the styles of earlier periods, was the predominant characteristic of 19th century architecture from Europe to Boston to Lowell. In the first half of the century the Federal Style, inspired by the new federal government, borrowed its form from the English Adam Style, while the Greek Revival Style borrowed its features from classical Greek architecture. In the second half

of the century borrowing became more eclectic, with several historical styles in vogue at once. Italian villas inspired the Italianate Style, French Second Empire Baroque buildings, the Mansard, and English Tudor cottages the Queen Anne. Toward the end of the century, historicism lessened, as the Shingle Style showed the beginnings of a more modern architecture, while the Double Decker reflected a change in lifestyle.

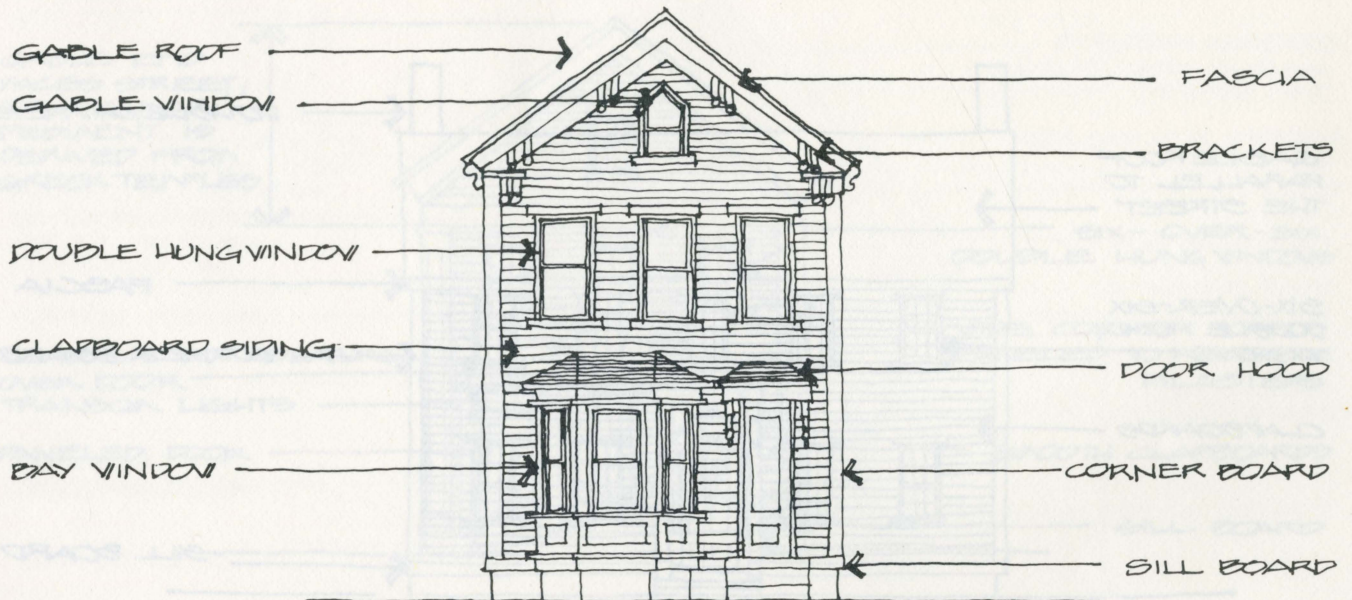
What follows is a graphic description of architectural styles which are prevalent in Lowell. No particular house is drawn. Rather, these drawings are abstractions which illustrate characteristic details of each particular style. Since architectural styles evolved gradually, it is not unusual to find buildings which exhibit details from several different styles. These local or "vernacular" interpretations of style are every bit as charming and worthy of note as the pure prototypes from which they were derived.

TIME LINE OF STYLES

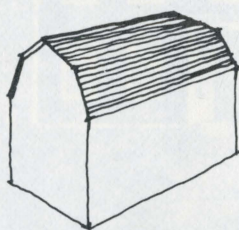


Parts of a House

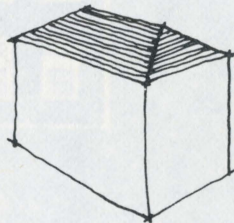
THE FACADE



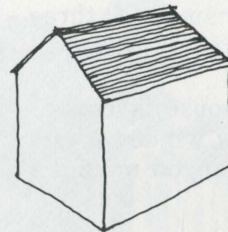
ROOF TYPES



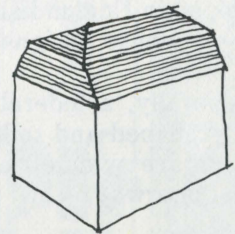
GAMBREL



HIP

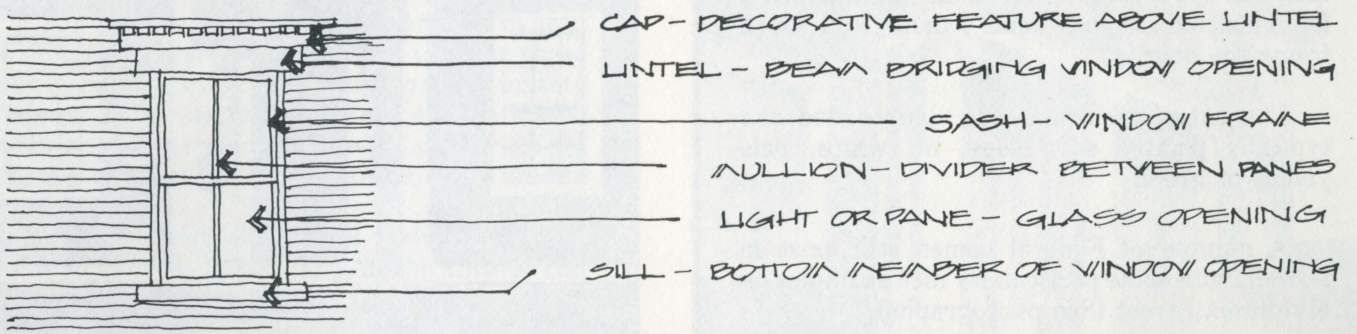


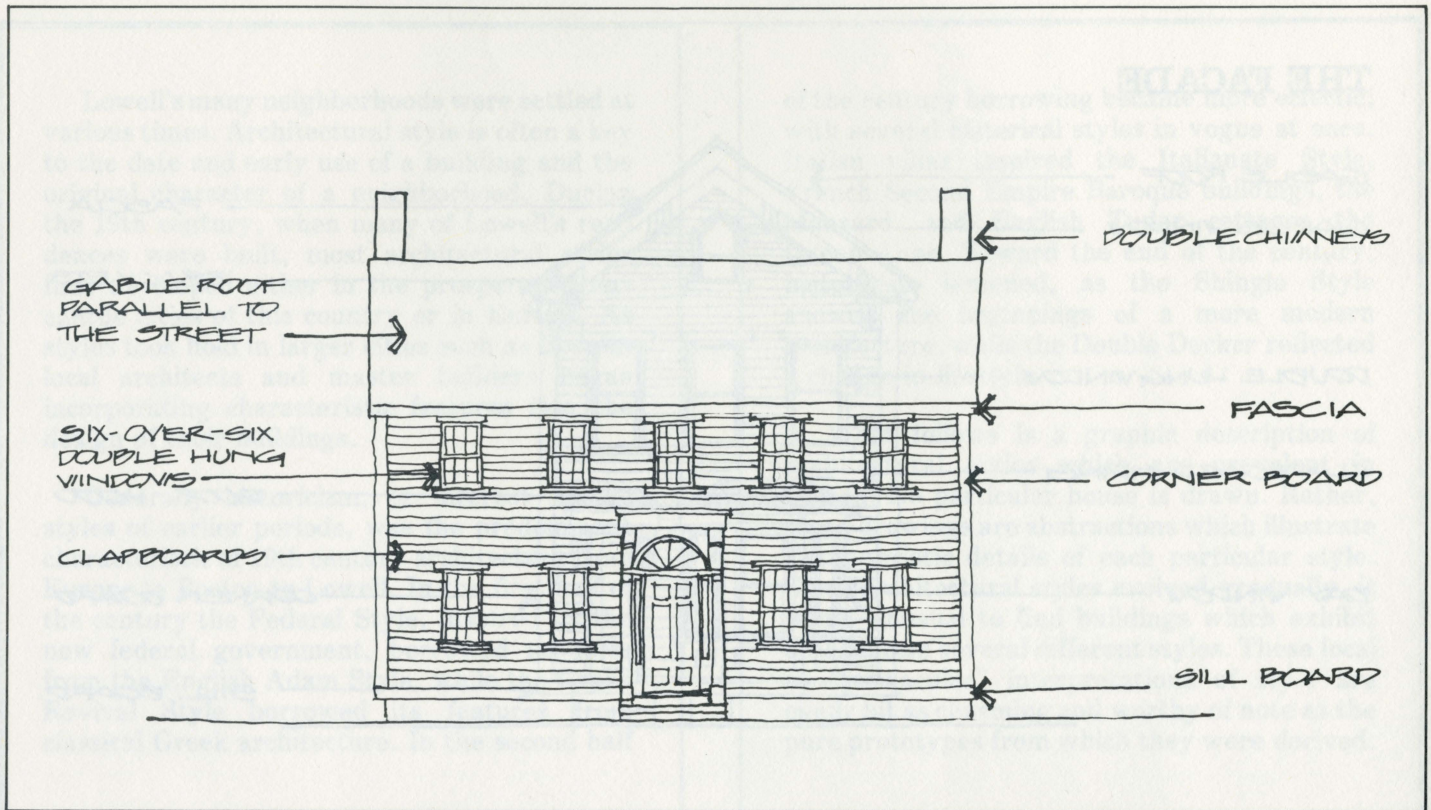
GABLE



MANSARD

WINDOW PARTS





Taking its name from the newly instituted federal form of government, this style became popular shortly after the Revolutionary War. Often referred to as the Adam Style, it first developed in England and was named for three brothers whose designs popularized the style.

Generally, a federal style house is rectangularly shaped and tall, narrow windows with 6/6 sash are symmetrically arranged around a central doorway.

The doorway is usually the focus of a federal style house. It was common to flank the door with slender, classically detailed columns or pilasters. These would be topped with a flat entablature to form a porch. Other features often found on a federal style home are semi-elliptical fanlights and strips of small-paned glass which frame the door.

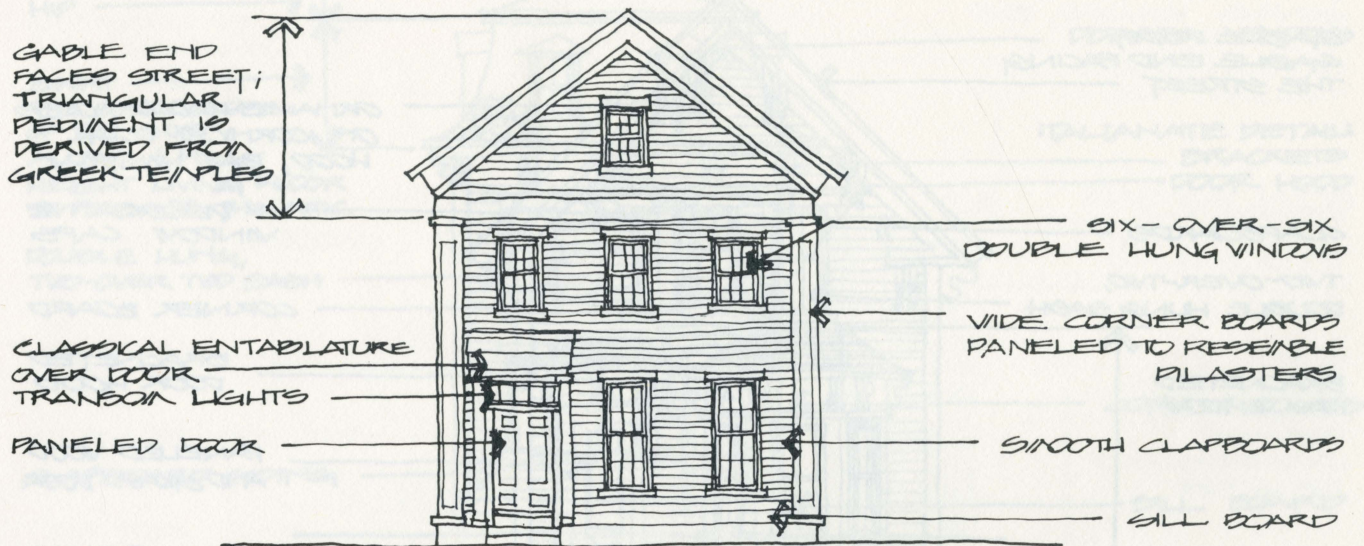
The exterior surface was clapboarded and typically painted soft beige, off white, pale yellow or green.

A number of Federal homes still exist in Lowell, with some particularly nice examples on Middlesex Street (See photographs).



c. 1820-1860

Greek Revival



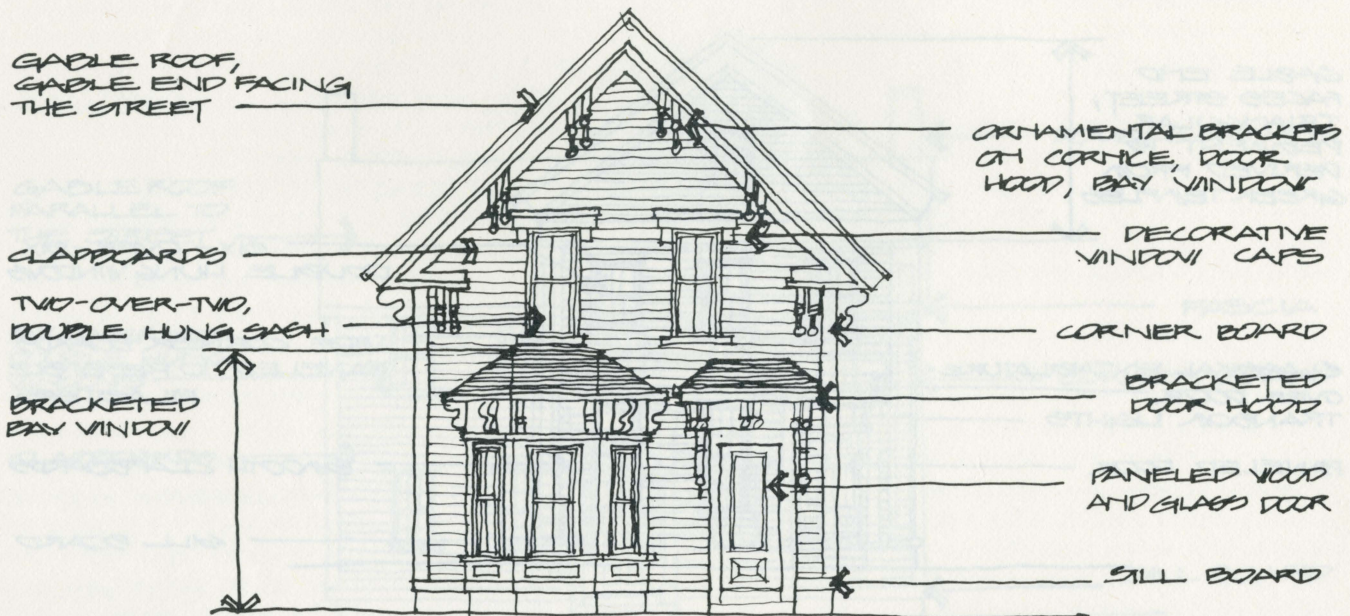
The Greek Revival is often considered "the first truly American style." Earlier styles were inspired by English building fashions and frequently built from English "pattern books." The Greek Revival style arose out of a young nation's desire to identify with the ideals of the ancient Greek Republic.

Inspired by the architecture of ancient Greece, buildings in this style are patterned on Greek temples. The triangular gable end which usually faces the street is analogous to the temple pediment, while the flat horizontal board which runs across the length of the gable represents the classical entablature. On a Greek Revival building corner boards or pilasters take the place of temple columns.

The exterior surface is generally covered with clapboards. It was common to paint these clapboards in buff grey or white tones to imitate the stone of Greek temples. Trim elements such as pilasters, cornices and the entablature were often painted in dark green or black.

Many fine Greek Revival style homes still exist in Lowell, particularly in the Chapel Hill neighborhood. (See photographs)





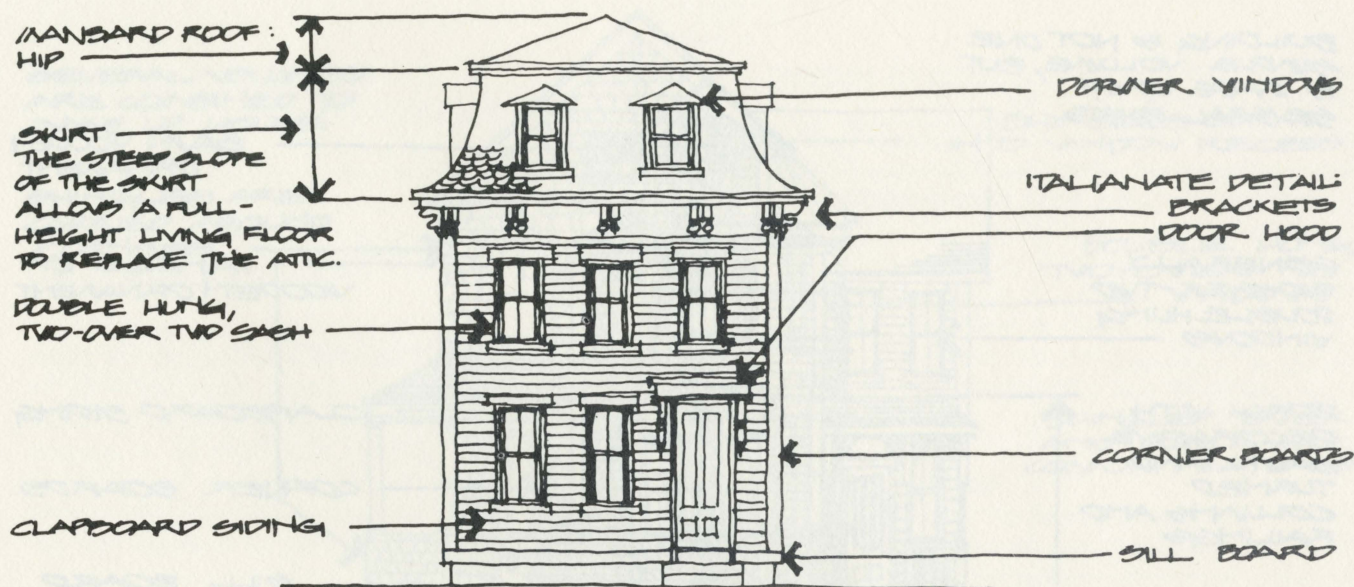
The Italianate/Bracketed Style was inspired by the breezy openness of Italian Villas. Abandoning the rigid formality of the Greek Revival Style, Italianate buildings have a freer more asymmetrical massing and "Romantic" features such as towers, cupolas and bay windows.

The style is chiefly distinguished by the heavy use of ornamental brackets, set under wide cornices and under door and window hoods. Mass production of these ornamental brackets and hoods made them readily available and relatively inexpensive. In Lowell, it is not uncommon to find earlier style buildings which were "modernized" during the mid 19th century with Italianate details.

Italianate homes were covered with clapboards and painted in rather deep yellow-green, grey or blue-gray colors. The brackets were usually painted in a strong contrasting color such as pale yellow or dark green.

The Italianate style was a local favorite and many fine examples can be found throughout the City. (Photograph: Lower Belvidere)



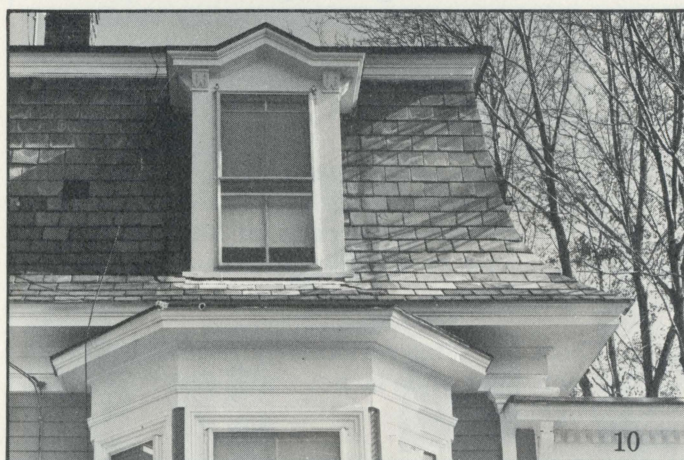


The Mansard Style, often called Second Empire Style because it developed during the reign of Napoleon III (1852-1870), originated in France and takes its name from its distinctive roof line. These mansard roofs often rise a story high and many were originally covered with slate tiles. Dormer windows of various shapes generally projected from the curved skirt of the roof.

The Mansard Style borrows heavily from the Italianate Style. Italianate brackets under the roof cornice and the door hood are often found on Mansard buildings.

Generally the exterior of a Mansard Style home was covered with clapboards and edged with corner and sill boards. Colors appropriate for these homes are the same earth tones used on Italianate buildings.

Mansard style homes can be found throughout Lowell; they range from one-and-a-half story cottages to three-and-a-half story double homes. There is a predominance of these homes in Centralville where the photographs at the right were taken.



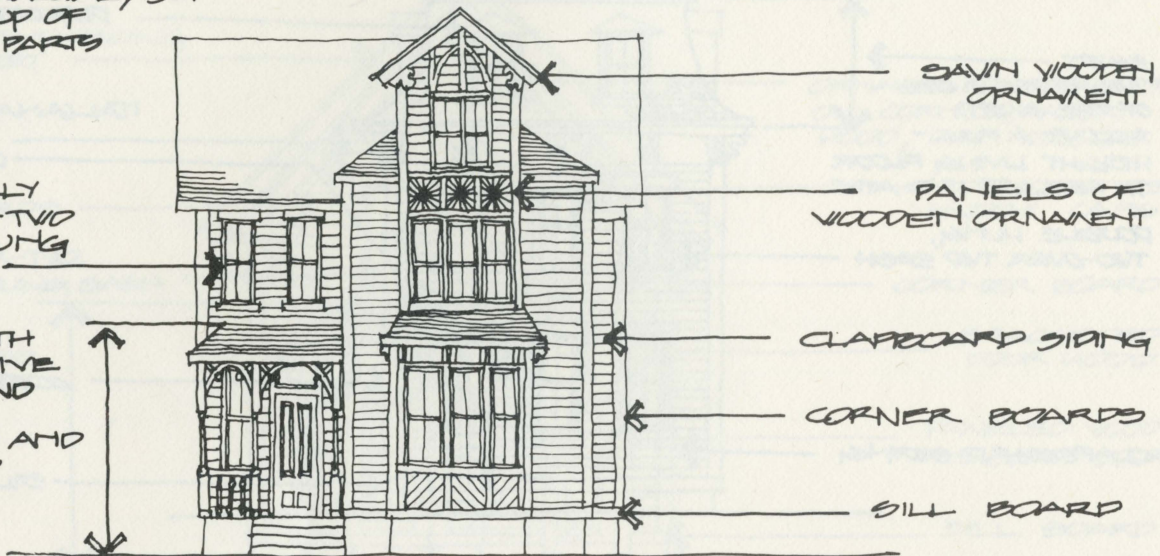
Queen Anne

c. 1875-1900

BUILDING IS NOT ONE SINGLE VOLUME, BUT IS MADE UP OF SEVERAL PARTS

GENERALLY TWO-OVER-TWO DOUBLE HUNG WINDOWS

PORCH WITH DECORATIVE SAWN AND TURNED COLUMNS AND RAILINGS



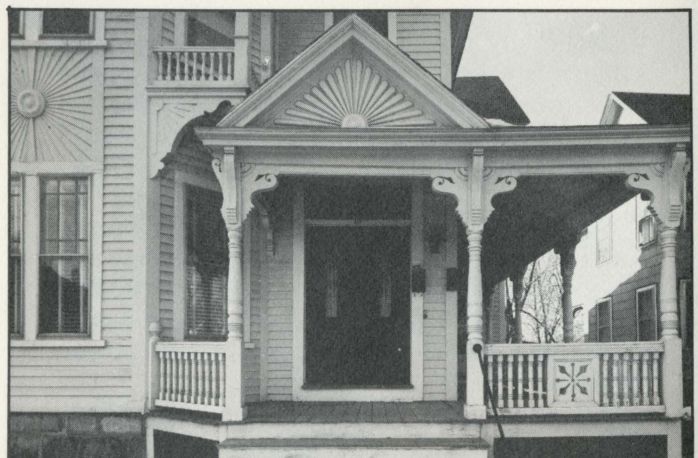
The Queen Anne style takes its name from the reign of an 18th century English Queen and was initially inspired by medieval English country cottages.

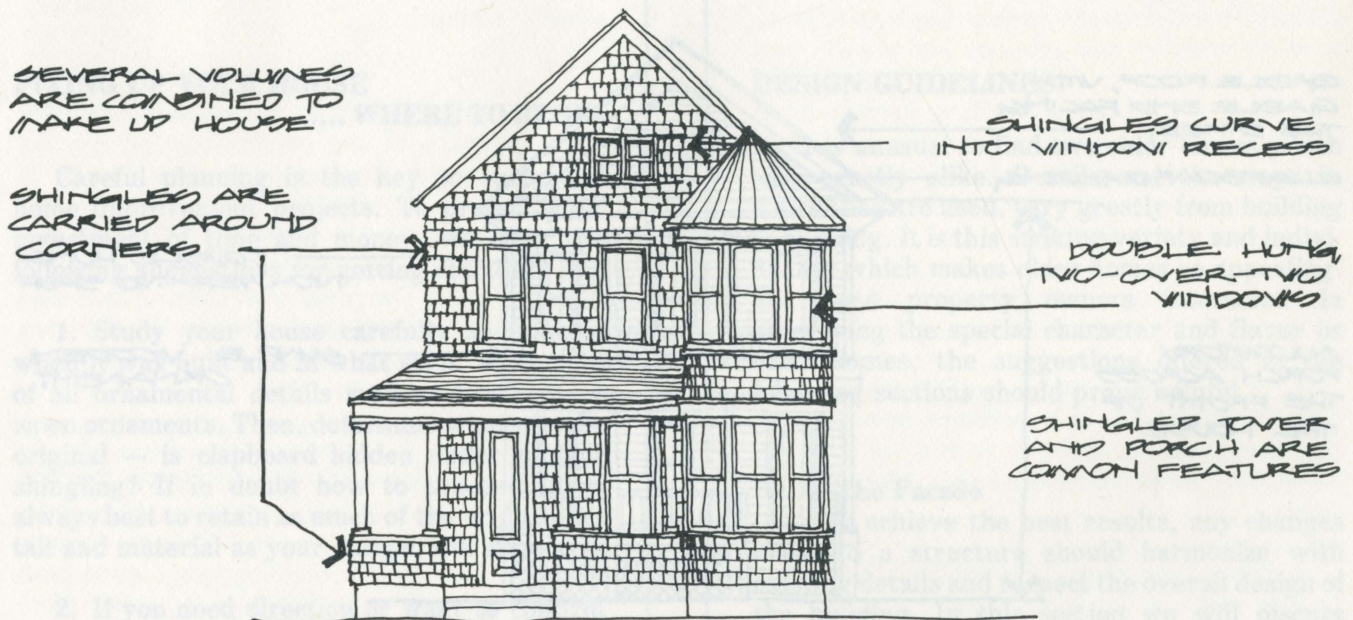
This style emphasized functional layouts so these homes generally have a rambling plan and irregular roof lines. Gables, massive chimneys, dormers and bay windows are all common features of the Queen Anne style.

Queen Anne buildings are highly decorative. This effect was often produced by combining colors and textures. For instance, different wall surfaces such as shingles, clapboards and panels of wood ornament may occur on one building. Extensive use of sawn ornament to accent dormer windows or detail porches also helped to create a decorative effect.

It is unusual to find two Queen Anne buildings that are exactly alike. The wealth of Queen Anne details and preference for asymmetrical massing encouraged highly individualistic free-flowing designs.

There are some particularly good examples of Queen Anne style homes on Wilder Street in the Highlands.

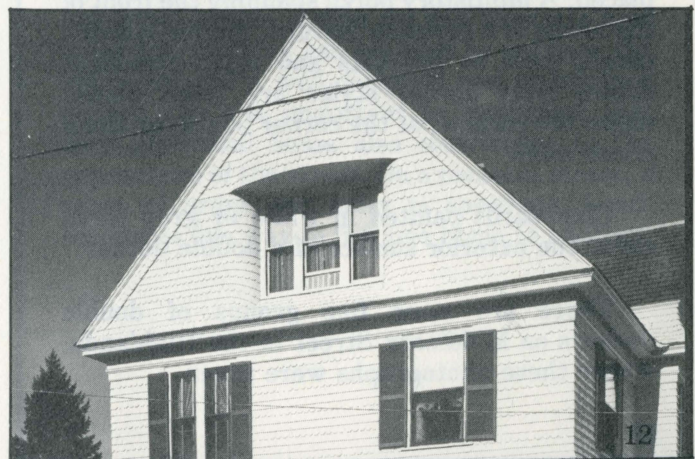


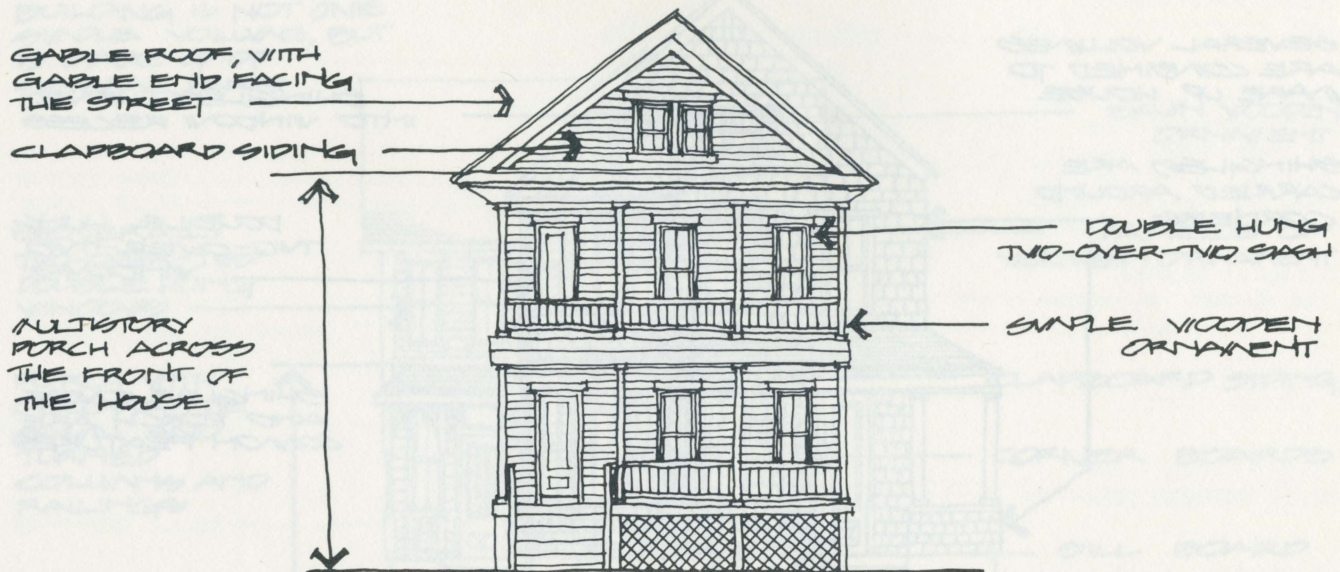


The Shingle Style is perhaps the most original 19th century style represented in Lowell. It shows few historical influences and, in the simple treatment of exterior surfaces and the openness and freedom of floor plans, it points to the beginning of 20th century architecture.

The distinguishing feature of this style is the wooden shingle. Shingles often cut in ornamental patterns cover the exterior surface of these buildings which are asymmetrically massed like the Queen Anne style homes discussed earlier. Towers, recessed windows, and porches covered with shingles are common features. Because the shingles are always carried around towers or porches and there are no corner boards to interrupt the surface, these shingles appear to form a skin which pulls together all of the building's features.

Often clapboards were used on the first floor and shingles on the second but there is much less variety of color and texture than in the more elaborate Queen Anne style.



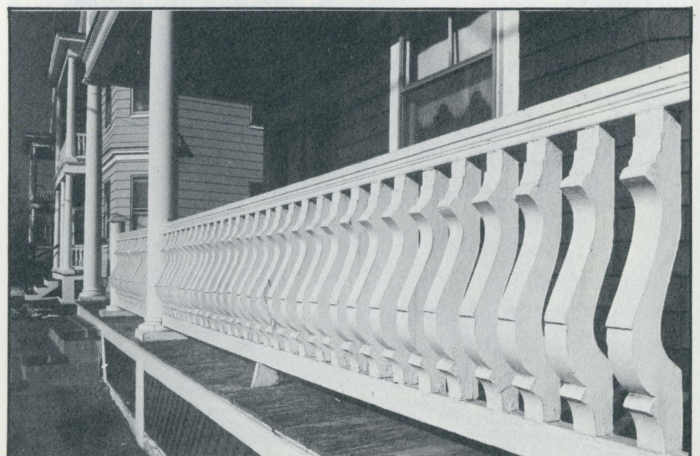


After World War I, undeveloped land convenient to the downtown or to cross-town street car service was becoming scarce. At the same time, the City's working class had grown and the demand for quality housing had increased. These factors prompted the development of a new residential type known as the double or triple decker. In Lowell, the double decker is far more prevalent.

Typically, these double deckers have the gable end facing the street. Roofs tend to be low pitched. Doors and windows are regularly placed. A multistory porch spanning the front of the house is a common feature. Simple wooden details such as brackets and sawn ornament drawn from earlier styles are often placed under the cornice, at the corner board, or along porch roofs.

Clapboards painted in white or grey tones cover the exterior surface of a double decker.

There are some fine groups of double deckers on Middlesex Street in the Highlands, where these photographs were taken.



DESIGN GUIDELINES

FIXING UP YOUR HOUSE

..... WHERE TO BEGIN

Careful planning is the key to successful home improvement projects. To protect your investment of time and money, we offer the following suggestions for getting started:

1. Study your house carefully and decide when it was built and in what style. Take note of all ornamental details such as brackets or sawn ornaments. Then, determine what may be original — is clapboard hidden under asphalt shingling? If in doubt how to proceed, it is always best to retain as much of the original detail and material as your budget will allow.

2. If you need direction or want to confirm your own stylistic assessment, spend some time hunting for old photographs, or newspaper clippings of your house, street or neighborhood. The Lowell Sun maintains an extensive photographic file and the Lowell Historic Society's photo collection at the Lydon/Alumnae Library on the North Campus of Lowell University is also a valuable resource. Members of the Lowell Historical Commission and staff of the Division of Planning and Development might also have helpful advice and information.

3. Develop a game plan before beginning any work. To avoid costly rehabilitation, take the time to think out every step. Also, be sure to check your systems — heating, plumbing and electrical — before making any interior or exterior changes. At some point before beginning work, it is often advisable to consult a professional. Their fees are less than you might expect. While you can probably do most of the actual work yourself, advice from a professional can often help you avoid costly complications.

4. Be sure to schedule the sequence and timing of your project realistically. Don't be caught with half your house painted when the first snow is forecast.

5. Document your efforts. Photograph your home before, during and after your work.

DESIGN GUIDELINES

It is unusual to find two older homes which look exactly alike. Details and the ways in which they are used, vary greatly from building to building. It is this striking variety and individuality which makes older homes so appealing. To those property owners interested in preserving the special character and flavor of older homes, the suggestions offered in the following sections should prove helpful.

A. The Facade

To achieve the best results, any changes made to a structure should harmonize with existing details and respect the overall design of the building. In this section we will discuss three basic design rules and illustrate how to apply these guidelines when planning a renovation.

B. Design Features

A building's character is most directly expressed by details such as doors and windows. While there are no hard and fast rules governing the treatment of a building's component parts, we will examine some of the options open to property owners who are remodeling their homes. In separate sections, windows, shutters, entries and siding materials will be discussed.

C. Streetscape

Beyond the actual walls of the house, there are a number of design issues that come into play. In this section we will illustrate how trees and planting can be used to enhance the appearance of a well-designed and maintained house. It is also important to remember that each individual house also contributes to the appearance of the street. On a pleasant street, a sense of order and unity is apparent. Landscaping is one way to link one home to another.

The Facade

Unlike new construction which starts from scratch, a renovation project begins with an existing building that already has a style and character of its own. By preserving the original design of your home, avoiding incompatible changes, and reconciling any changes you intend to make with the original, you will enhance the value of your older home. To do this, we suggest the following:

1. Any change or addition should be compatible with the original design of the building.
2. Whenever possible, retain original details and materials. If it becomes necessary to introduce new elements, or to mix old and new parts, they should harmonize with what already exists.
3. Never try to make a building look older than it really is by using details from earlier periods. The result will always look somewhat artificial.

The building shown in figure 1A is a typical Italianate cottage which has been maintained as originally designed. Details such as original corner boards, brackets, door and hood moldings have been retained as has the original wooden siding.

The other examples illustrate how the special quality of the original design can be undermined by using inappropriate details in the process of remodeling. For instance, notice how characterless the buildings in figures 1B and 1C look without the brackets and door and window hoods. The removal of these details also destroys the proportional relationship between the house as a whole and the door and windows, which now appear too small.

Figure 2A shows a typical Greek Revival house, first as originally designed, then with changes inappropriate to the building's design. Although two specific building types were used as examples, the modifications we have illustrated generally would be inappropriate on most older buildings.

House with Original Features

FIG. 1A
YES

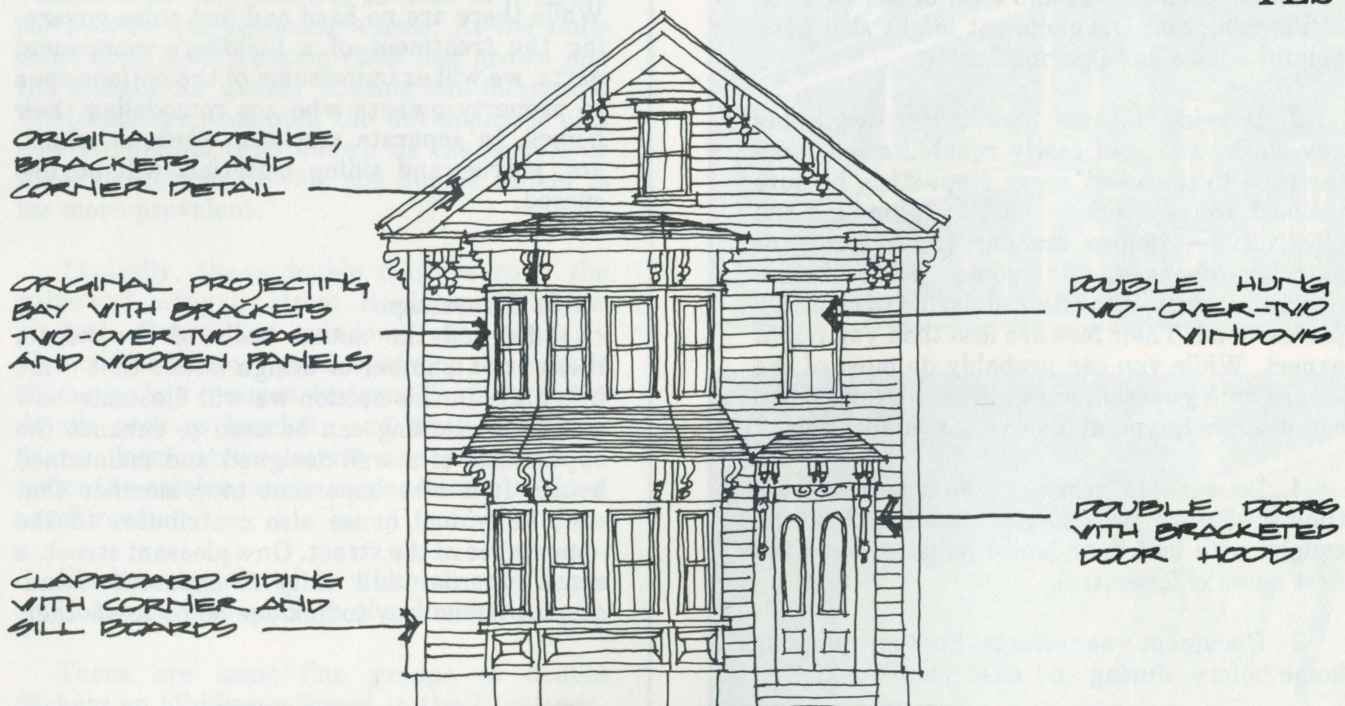


FIG. 1B
NO

Inappropriate Modernizing of Facade

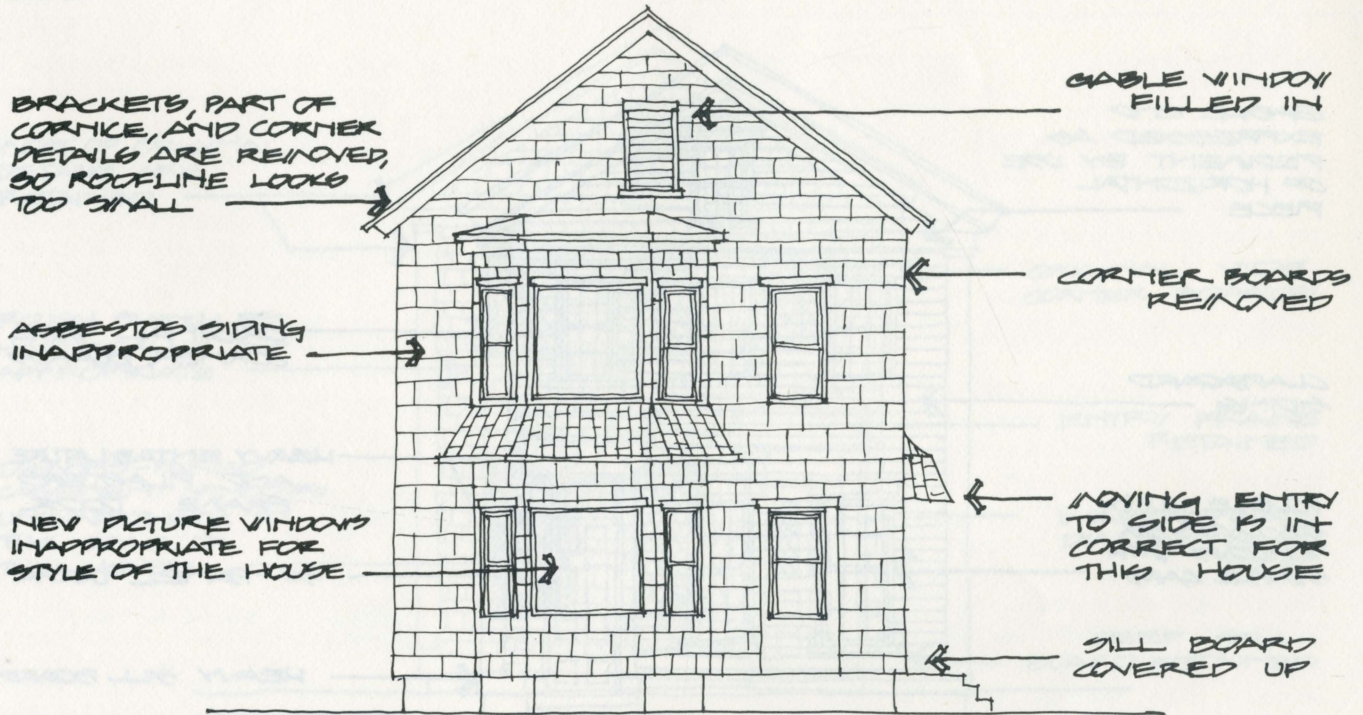
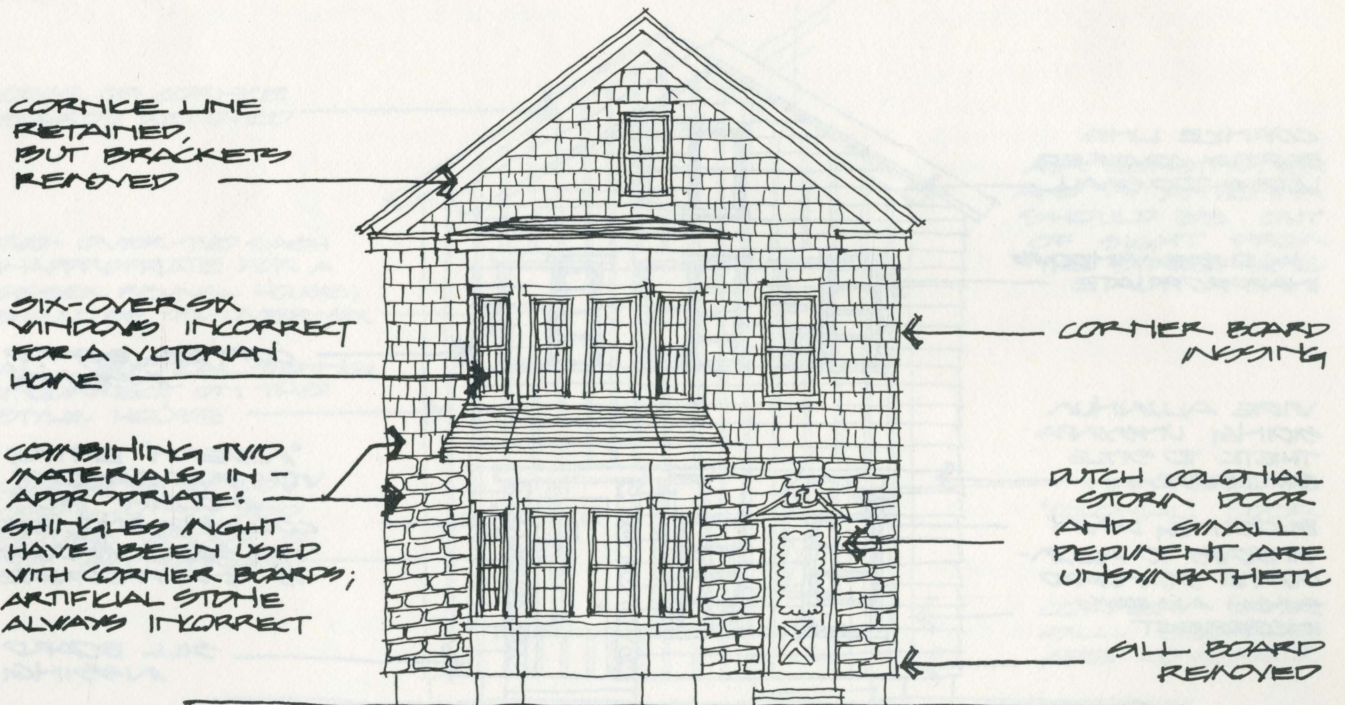


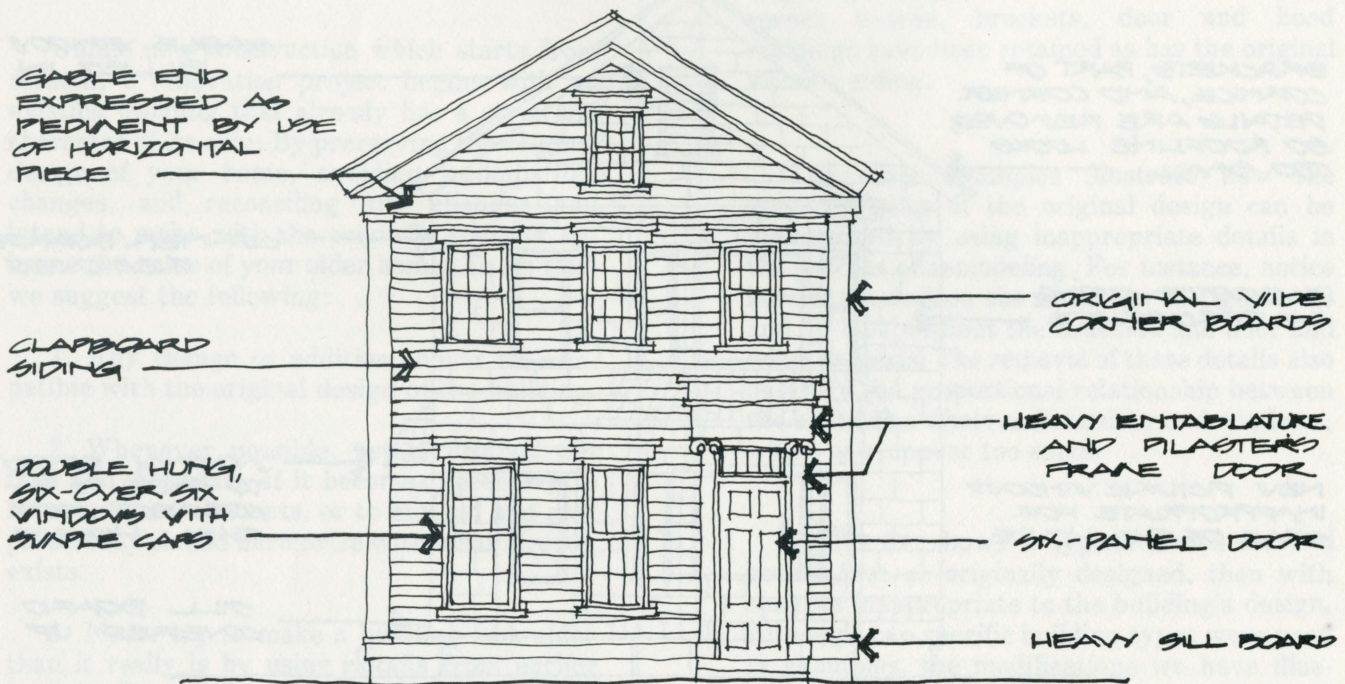
FIG. 1C
NO

Unsympathetic Colonializing of Facade



Facade Retaining Original Details

FIG. 2A
YES



Remodeling Diminishing Character of Facade

FIG. 2B
NO

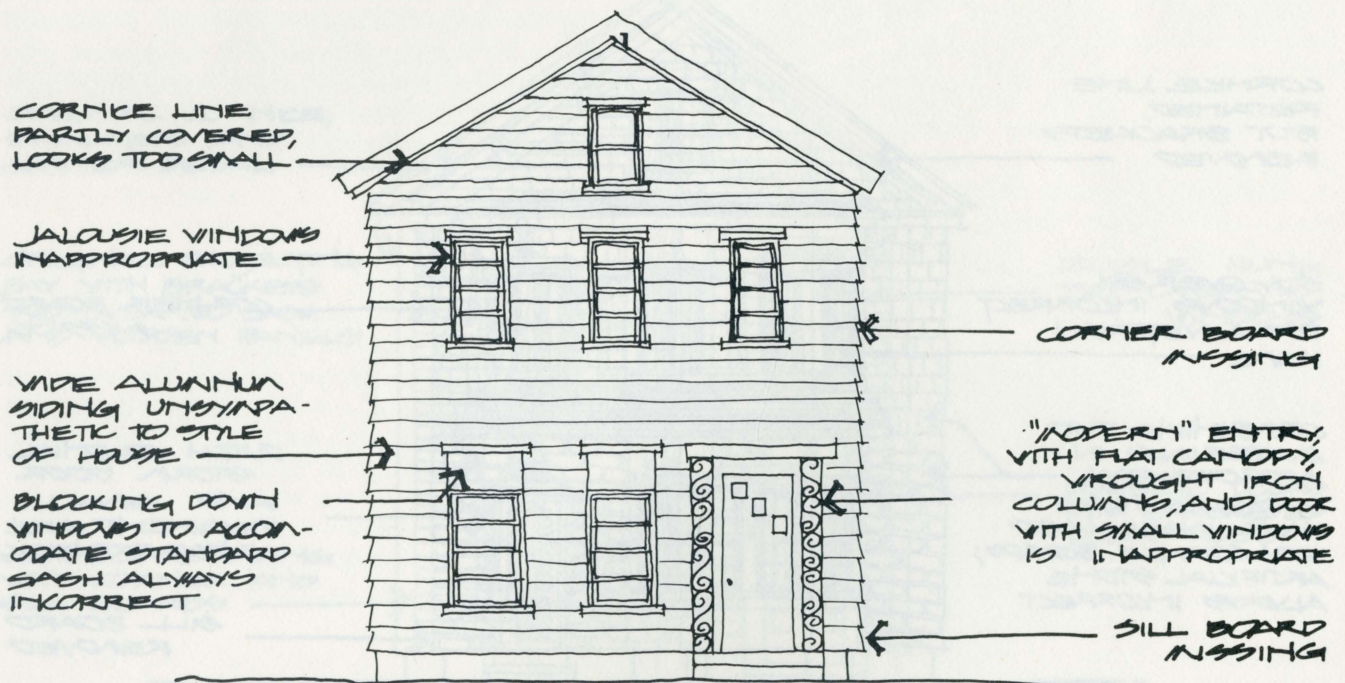


FIG. 2C
NO

Treatment Inappropriate to Style of the House

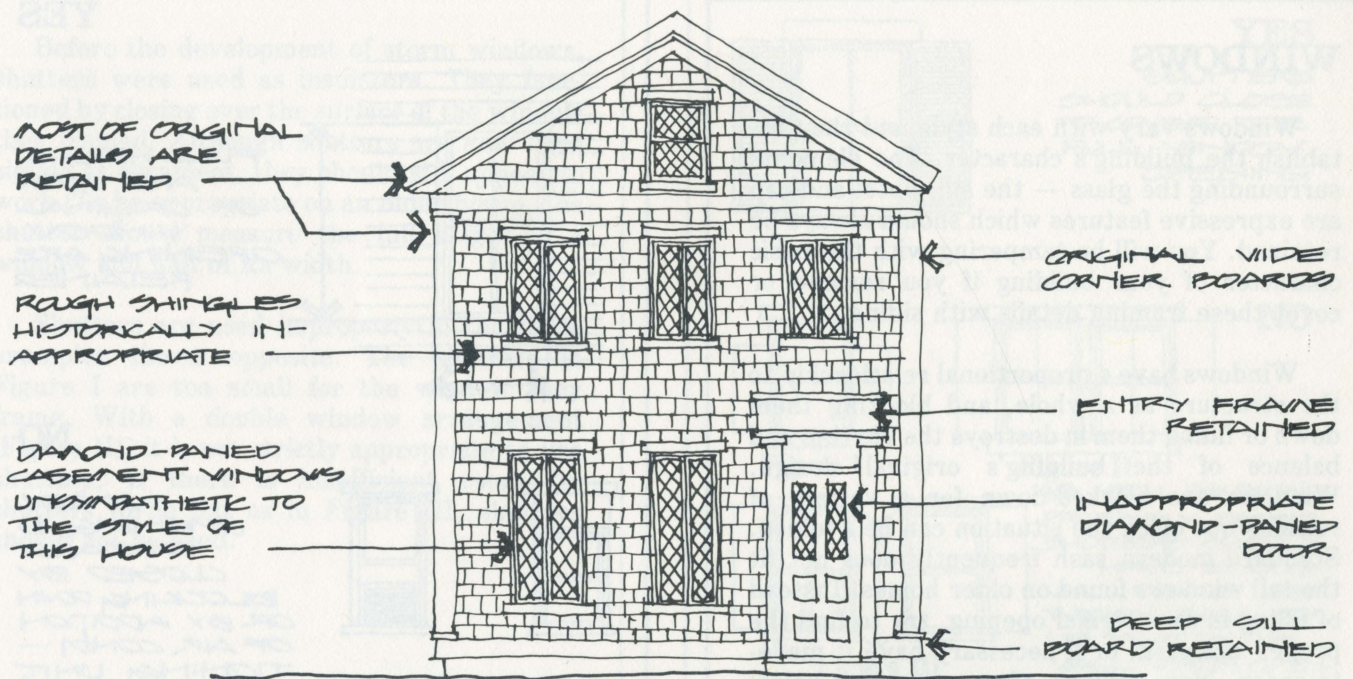
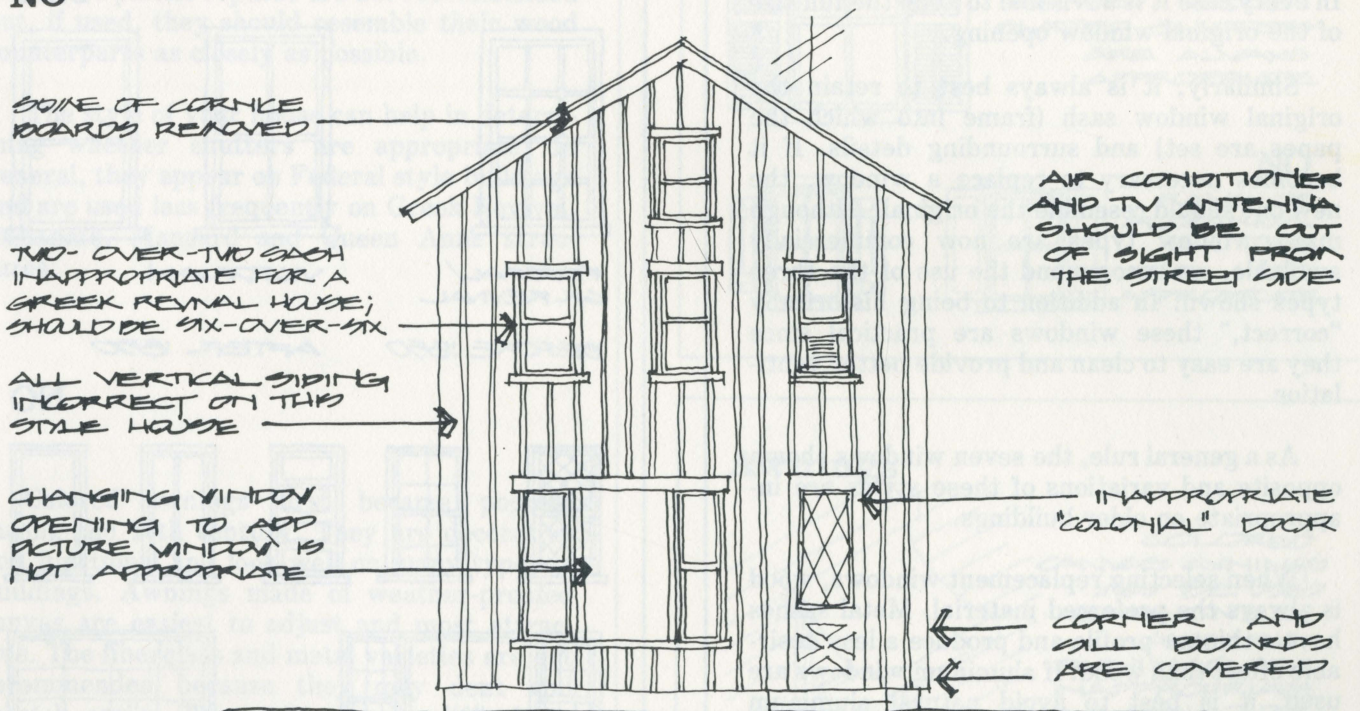


FIG. 2D
NO

Renovation Unsympathetic to Original Style



Design Features

WINDOWS

Windows vary with each style and they establish the building's character. The elements surrounding the glass — the sill, lintel and cap are expressive features which should always be retained. You will be tampering with the basic character of your building if you remove or cover these framing details with siding.

Windows have a proportional relationship to the structure as a whole, and blocking them down or filling them in destroys the rhythm and balance of the building's original design. Windows are blocked-down for a variety of reasons but often the situation can be avoided. Standard modern sash frequently does not fit the tall windows found on older homes. Instead of filling in the original opening, try to find the proper size sash, or if necessary have it made-to-order. New ceilings often are hung below existing window heads. Make every effort to keep the new ceiling above the tops of the windows openings; if that is impossible, the new ceiling should be sloped up at the outside wall to meet the top of the window opening. When installing an air conditioner, it is always advisable to place the unit in a side window rather than on the public side of your building. In every case it is advisable to keep the full size of the original window opening.

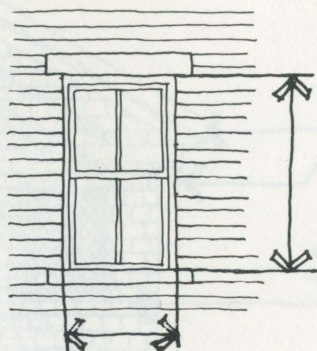
Similarly, it is always best to retain the original window sash (frame into which the panes are set) and surrounding details. If it becomes necessary to replace a window, the new one should resemble the original. Although many window types are now commercially available, we recommend the use of the three types shown. In addition to being historically "correct," these windows are practical since they are easy to clean and provide better ventilation.

As a general rule, the seven windows shown opposite and variations of these styles are inappropriate on older buildings.

When selecting replacement windows, wood is always the preferred material. Metal sashes have a thinner profile and produce a less desirable effect than wood. If aluminum windows are used, it is best to avoid natural aluminum finishes. A dark permanent finish, bronze or black, is preferable.

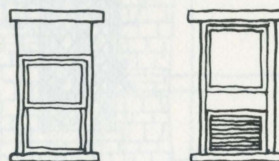
Window Openings

YES



FULL HEIGHT AND WIDTH OF ORIGINAL WINDOW OPENING ARE RETAINED

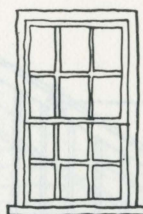
NO



WINDOW OPENING IS PARTIALLY CLOSED BY BLOCKING DOWN OR BY ADDITION OF AIR CONDITIONING UNIT. OPENING LOOKS TOO SMALL

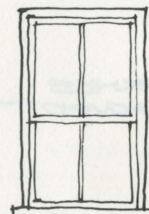
Types of Windows

YES



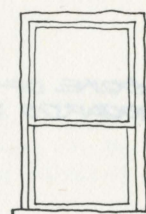
FEDERAL/
GK. REVIVAL

BEFORE 1850

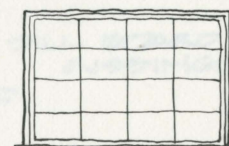
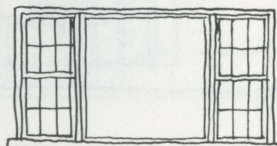
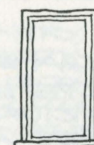
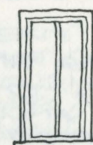
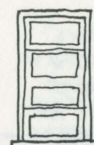
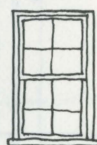
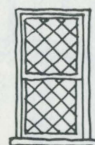


VICTORIAN

AFTER 1850



NO



SHUTTERS

Before the development of storm windows, shutters were used as insulators. They functioned by closing over the surface of the window they framed. Although shutters are now used simply as ornament, they should still appear to work. To be appropriate on an older house, the shutter should measure the full height of a window and half of its width.

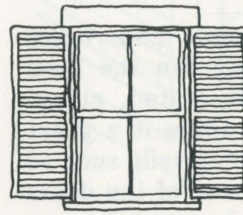
Shutters are used improperly in the three examples shown opposite. The shutters in Figure I are too small for the window they frame. With a double window arrangement (Figure II), it is not strictly appropriate to use shutters. If there is insufficient room for shutters to lie flat as in Figure III, shutters should not be used.

While many different styles of shutters are commercially available, we recommend the use of the traditional horizontal slat type. Wood is always the preferred material for shutters. Metal and plastic replicas are not recommended but, if used, they should resemble their wood counterparts as closely as possible.

The style of your house can help in determining whether shutters are appropriate. In general, they appear on Federal style buildings and are used less frequently on Greek Revival, Italianate, Mansard and Queen Anne structures.

Colored awnings first became popular during the 19th century. They are decorative and functional and look well on many types of buildings. Awnings made of weather-proofed canvas are easiest to adjust and most attractive. The fiberglass and metal varieties are not recommended because they may dent and scratch easily. They may also be difficult to adjust and are visually distracting.

Shutter Size



YES

SHUTTERS SHOULD CLOSE TO COVER THE FULL WINDOW OPENING

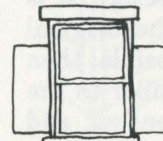


Figure I

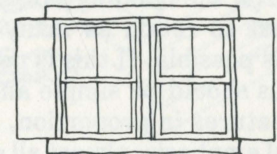


Figure II

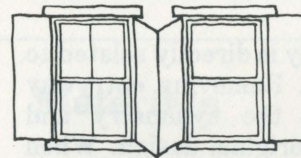
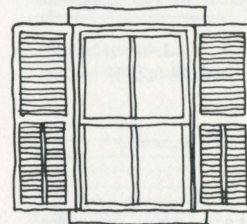


Figure III

NO

AS WELL AS BEING PROPERLY SIZED, SHUTTERS SHOULD HAVE ENOUGH WALL SPACE BETWEEN THEM TO LIE FLAT ON THE WALL WHEN OPEN.

Types of Shutters



YES

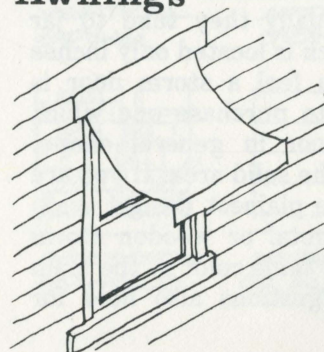
TRADITIONAL PAINTED WOODEN SLATED SHUTTERS ARE ALWAYS APPROPRIATE.



NO

RANCH OR ALUMINUM SHUTTERS ARE NOT APPROPRIATE

Awnings



COLORLED CANVAS AWNINGS MAY BE USED EFFECTIVELY. ALUMINUM AWNINGS ARE INAPPROPRIATE ON OLDER HOMES.

ENTRIES

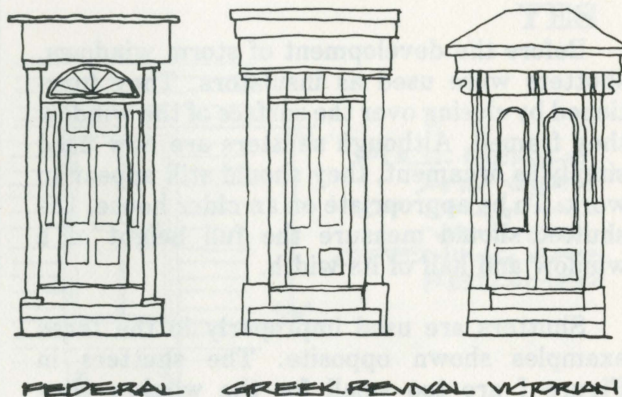
Entryways have a ceremonial importance and on older homes they are often the focal point of the facade. Richly decorated, entryways are very individualistic; there is a great deal of variety in the design of details such as hoods, columns and sidelights and of the doors themselves. Yet, for each style, an entryway type developed. Because the entryway is an integral part of the building's overall design, it is always best to retain as many of the original features as possible. If this is not possible, then new details should be simple and similar to the original features in proportion, dimension, and directional emphasis; almost all entryways have a vertical orientation.

The size of an entryway is directly related to the mass of the building. Removing entryway features often destroys the symmetry and balance of the building's original design. When seen from the street, the exterior entry will seem small unless it is made to appear larger than a regular interior door. This again is the reason for lavishing such attention on entryways by using heavy posts and other decorative elements. Notice how, without its hood, the doorway in figure 2 has lost much of its importance.

When possible, always retain the original door and restore its appearance by refinishing it. If it is necessary to replace the original, buy a new or used door, in the same style and size. If nothing authentic can be found, choose a solid flat-surfaced modern door. Try to avoid the door types shown below to the right. Most are highly inappropriate on older buildings.

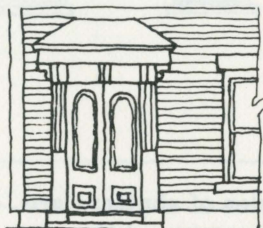
Heavy wooden doors are a good investment. If fitted with weather stripping, which is easy to apply, they are good insulators. Storm doors should be avoided. Visually they tend to jar with the inner door which is located only inches away. However, if you feel a storm door is necessary, always try to purchase one which resembles the inner door in general shape, placement and style of the solid area. If you are unsuccessful, choose the plainest design available. Always paint a metal or wooden storm door and its frame in the same color as the main entry door. These suggestions also hold for screen doors.

Original Features

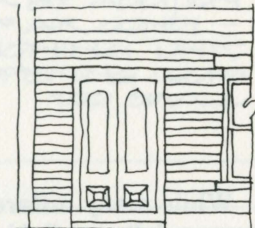


FEDERAL GREEK REVIVAL VICTORIAN

Entry Treatment



ORIGINAL ENTRY:
WELL BALANCED



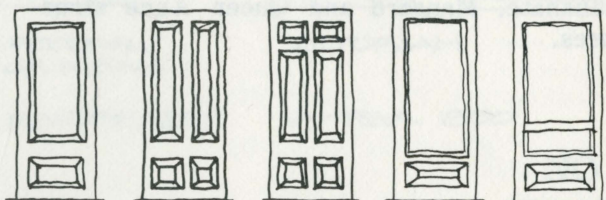
TRIM REMOVED
DOOR LOOKS OUT
OF PROPORTION

Figure I

Figure II

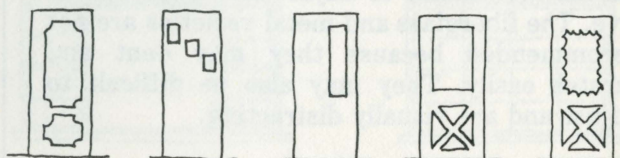
Doors

YES



PANELED WOODEN DOORS OR WOODEN STORM DOORS ARE APPROPRIATE. DOORS SHOULD BE OF THE ORIGINAL SIZE AND SHOULD BE PAINTED

NO



SIDING MATERIALS

It is the small, often handcrafted detailing that chiefly distinguishes older homes and contributes so highly to their visual appeal. As with window and door features, it is always advisable when remodeling to retain corner and sill boards. If these details have rotted, replace them with new wooden members similar in size and dimension. Take care when installing siding to retain the full width of the corner and sill boards. **Never** sacrifice these details by covering them over completely.

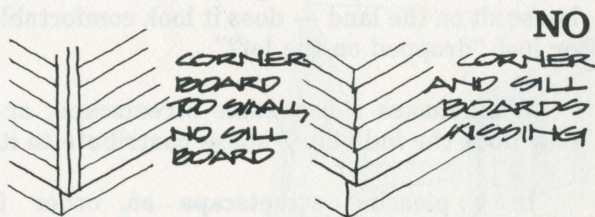
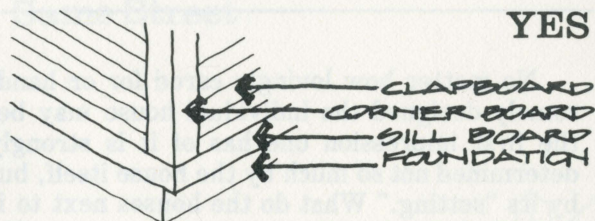
Wooden clapboarding is the most commonly used siding material. The horizontal wooden strips that overlap one another cast fine shadows about four inches apart. The visual effect produced by these shadows has not been successfully reproduced by other materials. It is safe to say that no siding material is likely to look better than the original clapboarding. However, although the vinyl and aluminum imitations do not have the distinctive visual quality of their wooden prototype, they are acceptable and may require far less maintenance (see technical section).

If you decide to use synthetic clapboard siding, remember that it is imitating wood and should behave accordingly. For instance, avoid wood grained siding because the "grained" effect is never apparent on a good wooden clapboard. Also when applying synthetic siding always follow the direction of the original material and maintain the same spacing between horizontal lines. Again, take care to retain trim elements, especially at corner and sills.

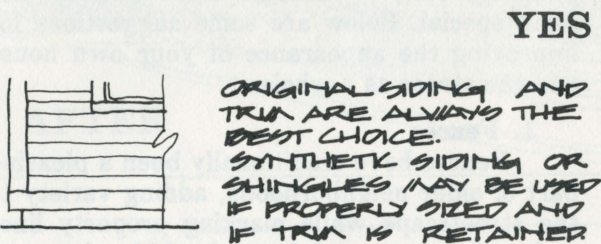
Avoid imitation brick and stone siding because they are generally unconvincing. While the stones or bricks may appear to be randomly placed on a sample, when that same material is applied on a building, a pattern is generally detectable and the effect is artificial looking. Asbestos and asphalt shingles should also be avoided because their small repetitive units lack a directional bias and they tend to produce a cluttered and disunified effect. It is safe to assume that unless a house was originally covered with shingles, artificial ones will look inappropriate.

It is not advisable to mix different types of siding on a building. The juxtaposition of materials is common on Queen Anne and Shingle Style homes, but even on these, unless the mixture of siding materials is original, you should not consider adding it.

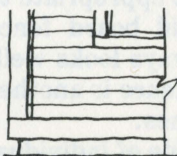
Corner Treatment



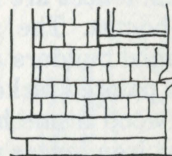
Materials



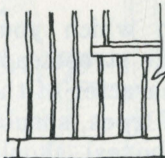
ORIGINAL CLAPBOARD



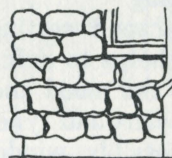
VINYL OR ALUMINUM



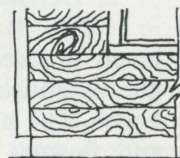
SHINGLE



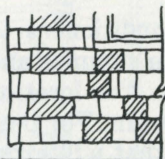
VERTICAL SIDING



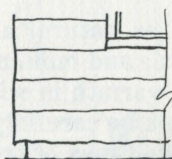
ARTIFICIAL STONE



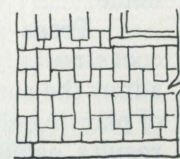
GRAINED VINYL



ASBESTOS SHINGLE



WIDE VINYL OR ALUMINUM



STAGGERED BUTT SHINGLE

NO

Streetscape

No matter how lovingly cared for or handsomely designed the individual house may be, the first impression one has of it is strongly determined not so much by the house itself, but by its "setting." What do the houses next to it look like? Do they fit together? How does the house sit on the land — does it look comfortable or just "dropped on the lot?"

What makes a handsome streetscape, and how does the individual house contribute to it?

In a pleasing streetscape an order is apparent. A regularity and rhythm, a sameness in height, size, shape and roof forms — makes the houses read like a "family" along the street. Rather than becoming boring, this repetition creates a framework within which the differences in smaller details — entrances, fences, planting, etc., — become more noticed and more special. Below are some suggestions for improving the appearance of your own house and the street as a whole.

1. Fences

Fences have traditionally been a pleasing part of older neighborhoods, adding variety to the streetscape while marking property lines and outdoor spaces. A fence should be chosen to harmonize with the house. Modern concrete walls or chain link fences are not appropriate to Lowell's older homes. The solid board fence used by the colonial builders always looks well, while the simple painted picket fence is another good choice for wood frame homes.

Ornate cast iron fences made of individual cast sections became popular in the 1840's. Many fine examples remain in Lowell, and effort should be taken to preserve them.

2. Landscaping

The landscaped setting in which your house is placed helps to define the streetscape and establishes the mood and character of the house. The patterns and types of trees, shrubs and flowers (possibly window boxes) should provide sufficient privacy and at the same time enhance, not hide, the appearance of your home.

Trees act as natural air conditioners to cool streets, yards and buildings in summer and admit the sun's warmth in winter. The location of planting should be carefully chosen. For best results, select the types of trees that will grow well on your property — whether it be sunny, partly sunny, a narrow space, etc. While it is

always wise to check with a nursery for advice, these trees are generally good choices:

Large Shade or Street Trees: Amur Cork-tree, London Planetree, Sargent Cherry, Scarlet Oak, Thornless Honey Locust, Zelkova "Village Green", Norway Maple, Copper Beech.

Medium Size Shade Trees: American Yellow-wood, Chinese Scholartree, Fringe-tree, Sourwood, Japanese Maple, Little-leaf Linden.

Trees for Narrow Areas: Bradford Callery Pear, Columnar Norway Maple, Katsura Tree, Maidenhair Tree—Ginkgo Biloba (Male).

Flowering Trees: Dogwood, Downy Shad-blowl—Amelanchier, Flowering Cherries, Flowering Crabapples, Saucer Magnolia.

Shrubs were not commonly used around the base of buildings until the 1850's but when well placed and cared for, they always seem appropriate.

Deciduous & Flowering Shrubs: Azalea, Cotoneaster, Forsythia, Japanese Quince, Rose Bushes, Winged Evonymus.

Everygreen Shrubs: American Yew, Azalea, Japanese Holly, Rhododendron, Spreading English Yew.

Annual — Summer Bedding — Potting Plants: Coleus, Geraniums, Marguerites, Marigolds, Patience Plant, Petunias, Tobacco Plant, Wax Begonia.

3. Paving and Ground Cover

A well maintained lawn always enhances a home. It is also possible to use low maintenance ground covers such as pachysandra, ivy or myrtle along foundations, walls and fences. Once again before purchase, always check with a nursery to make sure that conditions in your yard are suitable for these plants.

Paving materials historically used are still appropriate today:

For paths: Sod, Brick, Stone Slabs, Slate, Cobblestones.

For Courtyards or Patios: Cobblestones, Slate, Brick.

For Driveways: Brick, Stone Slabs, Cobblestones.

Large expanses of concrete or asphalt are generally undesirable because they attract and hold the heat in summer and are not visually attractive or historically appropriate.

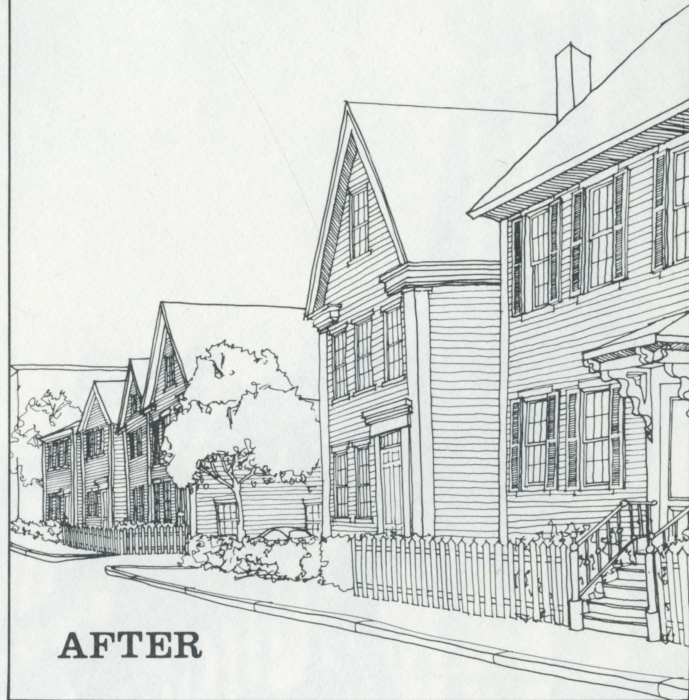
When installing any of these materials be sure to provide a good 8 inch base of crushed stone and sand to allow for drainage and to lessen the heavy effect of frost.

Characterless Streetscape

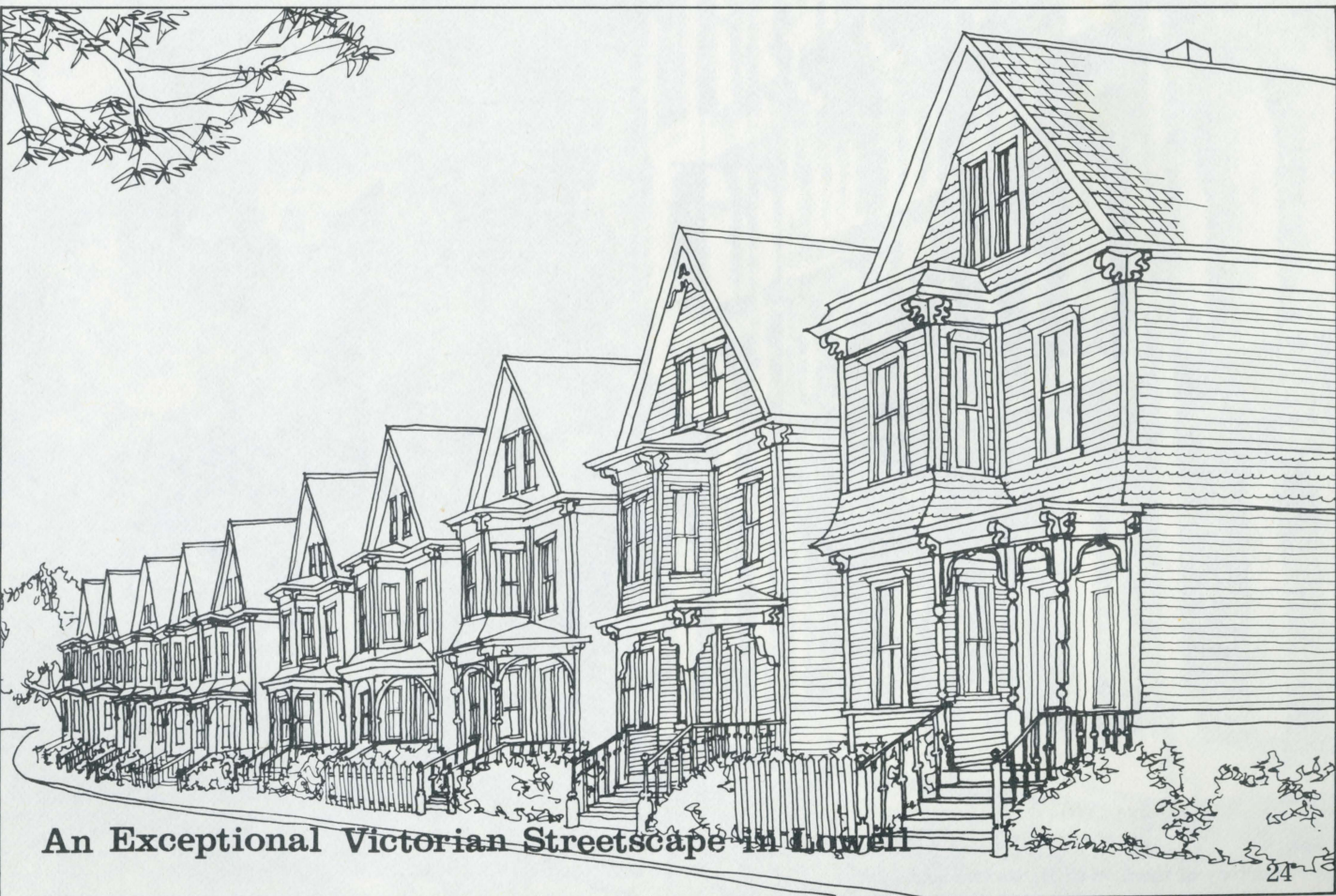


BEFORE

**Sensitive Treatment of the
Same Street**



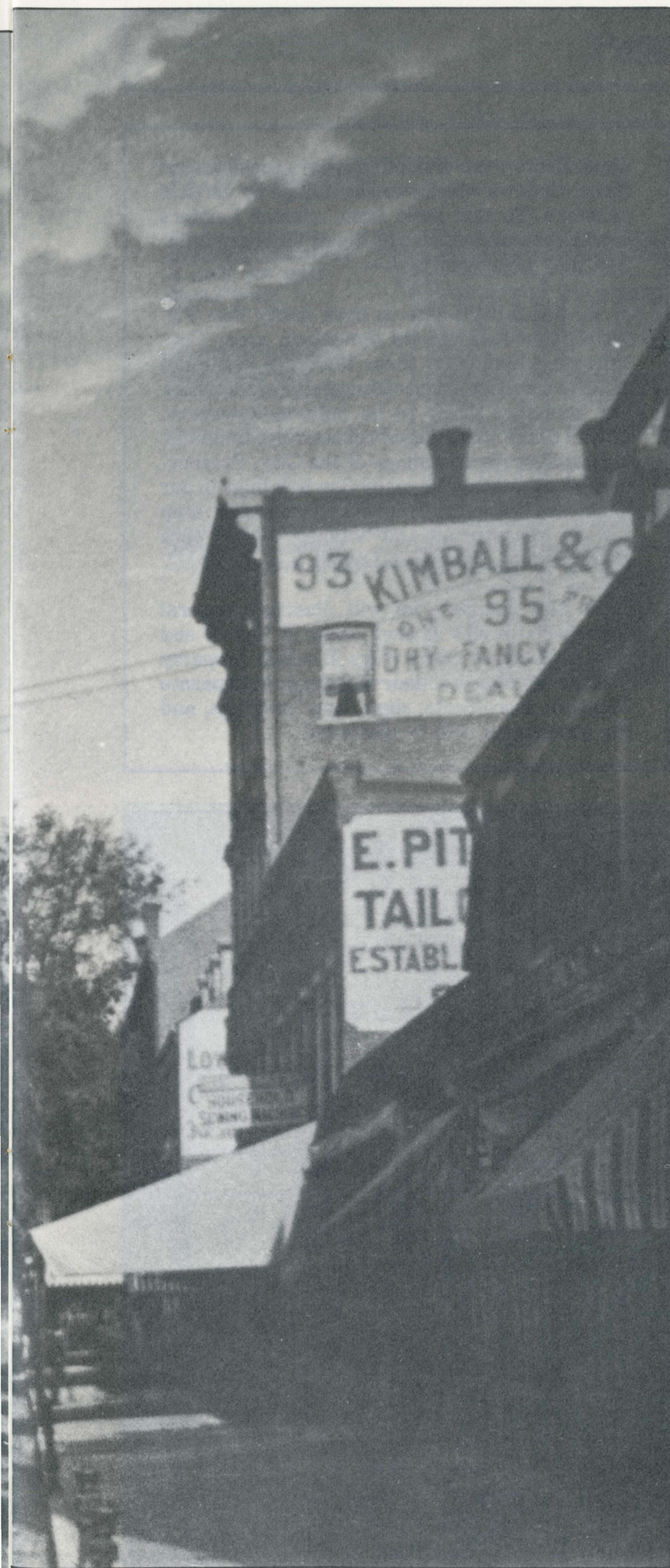
AFTER



An Exceptional Victorian Streetscape in Lowell



Courtesy of the Lowell Historical Society



COMMERCIAL BUILDINGS

ARCHITECTURAL STYLES

Along with the construction of the mill complexes and the corresponding growth of the labor force, came a demand for goods and services. During the mid-1800's, Lowell's commercial district grew in a frantic effort to keep pace with the rapidly expanding industrial community.

Most of the buildings in downtown Lowell were constructed between the years 1850-1890. These commercial buildings reflect the eclecticism so characteristic of Victorian architecture. It is almost impossible to point to one style or feature which typifies the period. Instead, it is common to find on one building, details and features drawn from a number of earlier styles. While this multiplicity makes it difficult to categorize individual buildings by style its effect produces a wonderfully varied and colorful streetscape.

Throughout the 19th century, the basic plan for commercial buildings remained fairly constant. Buildings were rectangularly shaped and constructed to a height of 3-5 stories. Often the

upper floors were divided into bays consisting of three windows which were contained by vertical pilasters. To this basic form, master builders would then add whatever detail or ornamentation they preferred.

Lowell is fortunate to have many fine Victorian structures in its downtown area. Considered individually, these buildings are more solidly constructed and elaborately detailed than any structure likely to be built in downtown Lowell today. Considered collectively, buildings in Lowell project an image of the City. Preserving and enhancing the many fine buildings in our business district will constitute a major step toward recapturing the vitality which once characterized downtown Lowell.

In this chapter, we will illustrate several commercial styles as they occur in Lowell and then discuss the many ways in which property owners can improve their buildings. In separate chapters, storefronts, signs, new buildings, and the streetscape will be discussed.



Courtesy of the Lowell Historical Society

THE FACADE

ORNAMENTAL
CORNICE FORMS
A CAP TO THE
BUILDING

DOUBLE-HUNG
WINDOWS ON
UPPER FLOORS;
TYPE VARIES
WITH STYLE.

CONTINUOUS
LINTEL SEPARATES
UPPER FLOORS
FROM STOREFRONT



PILASTERS ARE
USED IN SOME OF
THE STYLES TO
EXPRESS THE
STRUCTURAL BAYS
OF THE BUILDING.
WINDOWS
ARE GROUPED
BETWEEN THEM

STOREFRONT
IS CONTAINED
UNDER LINTEL
AND BETWEEN
MASONRY PIERS

THE STOREFRONT

LINTEL
SEPARATES
UPPER
FLOOR
FROM
GROUND
FLOOR

MASONRY
PIERS ARE
CARRIED
DOWN FROM
UPPER FLOORS

WOOD OR
CAST IRON
COLUMNS
FORM THE
STRUCTURE
OF THE
STOREFRONT

WOOD OR
CAST IRON PANELS

SMITHSON CAMERA

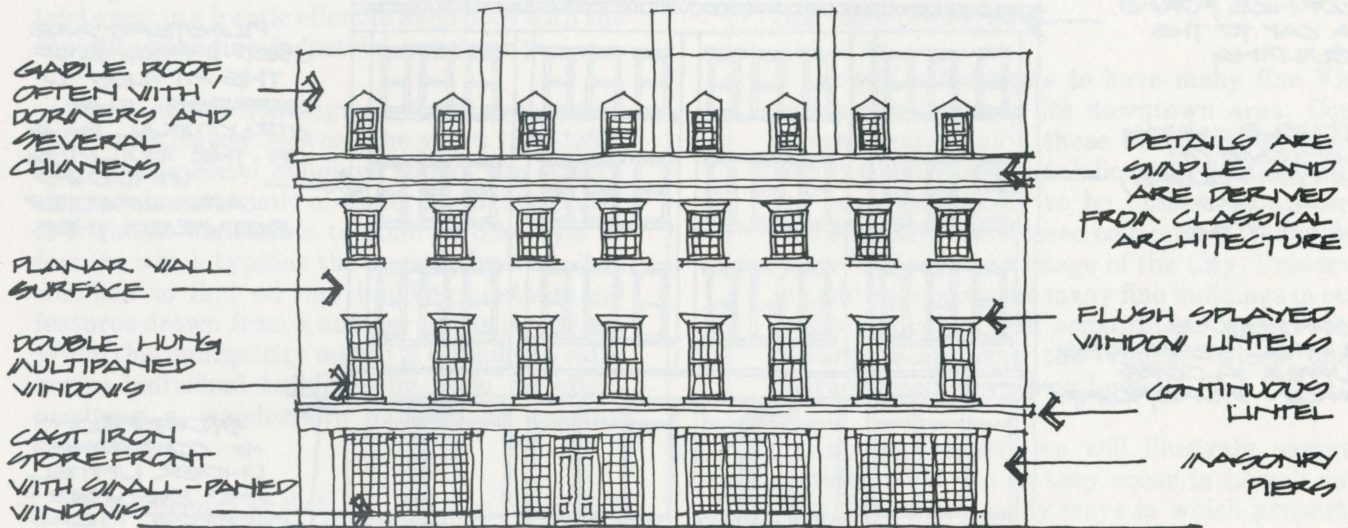
SIGNS MAY
BE LOCATED
ON LINTEL

TRANSOM
WINDOWS OVER
DOORS

STOREFRONT
WINDOWS HAVE
VERTICAL
PROPORTIONS,
MAY HAVE
TRANSOM
WINDOWS ABOVE

HEAVY SILLS

WOOD AND GLASS
PANELED DOORS

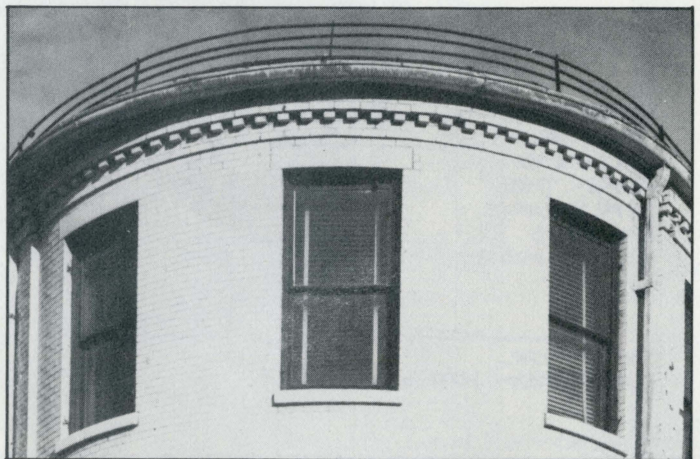
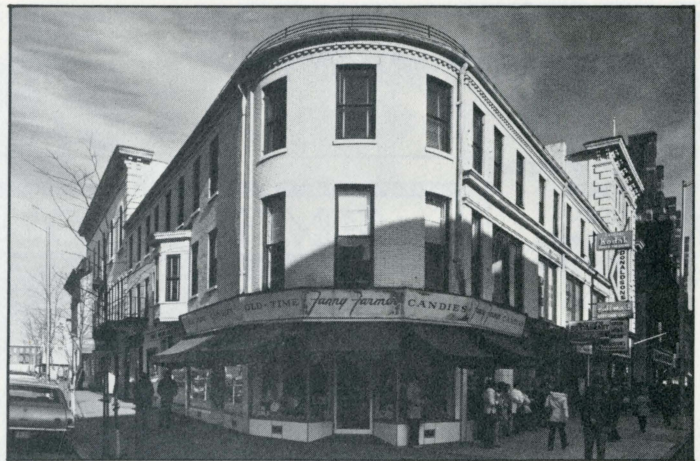


Lowell's earliest commercial buildings were constructed in the Federal style. Smaller in size than later commercial blocks, these buildings are generally rectangularly shaped.

The exterior wall of a Federal style commercial building is flat. Long, narrow, six over six (6/6) sash windows on the upper floors are spaced regularly across the facade. Unadorned granite lintels and sills frame the window openings and lie flush with the surface. Simple classical ornament placed along the cornice line frequently occurs.

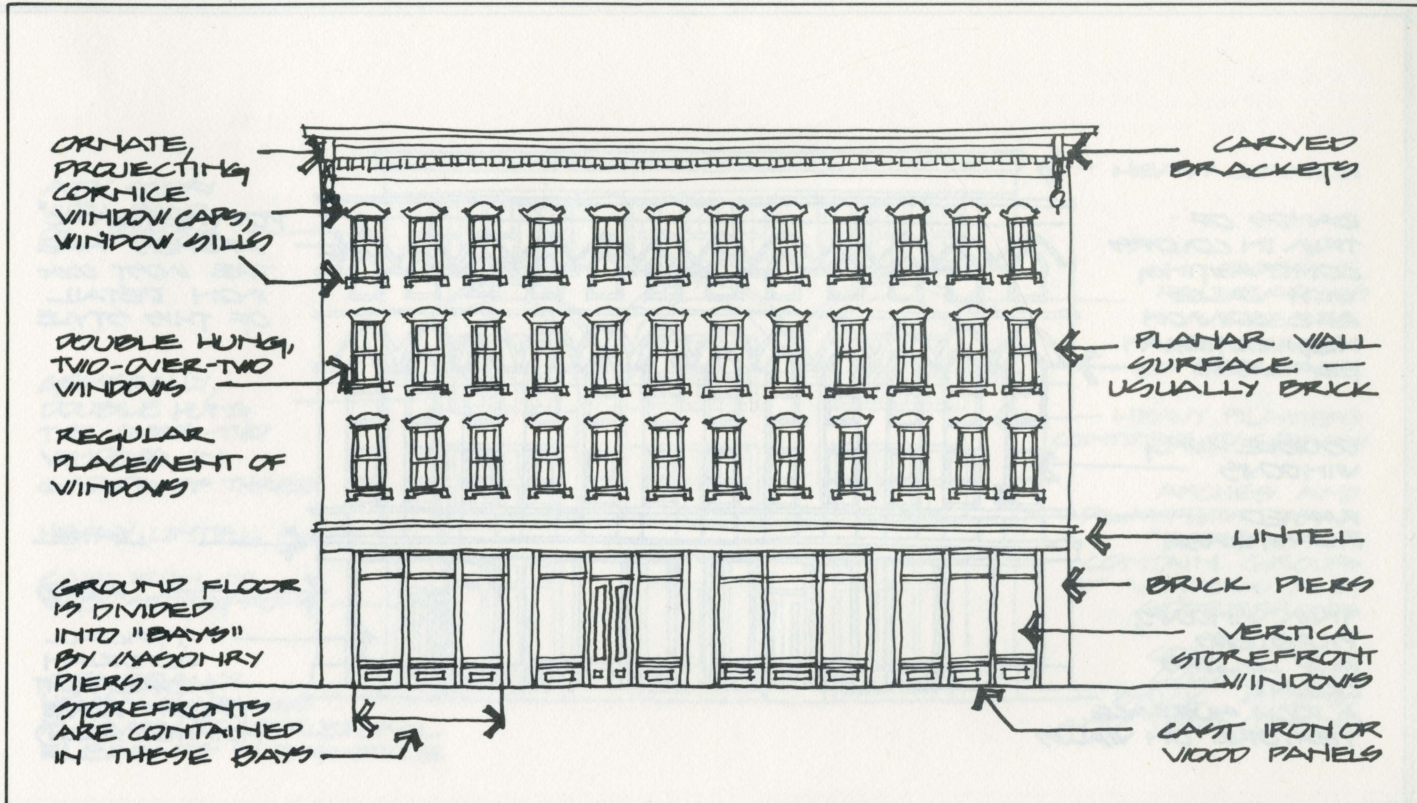
Federal style commercial blocks often have a gabled roof which parallels the street and may be punctuated by a series of dormers and chimneys.

A horizontal beam or lintel separates the storefront level from the upper floors. Masonry piers carried down from the upper floors separate one shop from another. Spacing of storefront windows and entires echoes the arrangement of openings on the upper floors, thus integrating the storefront with the rest of the building.



c. 1845-1870

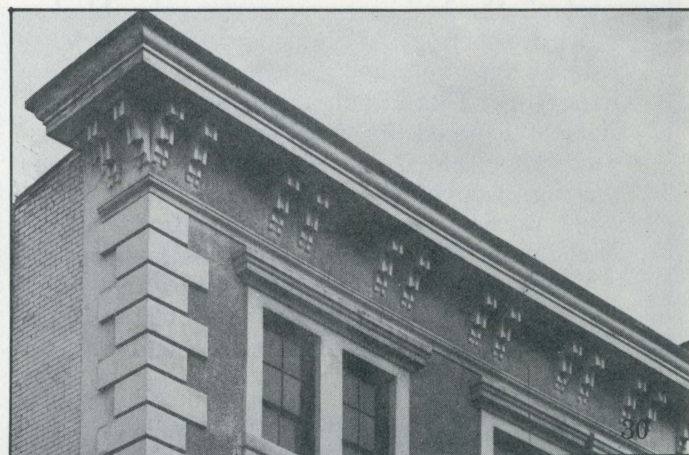
Italianate



Italianate commercial buildings are easy to identify because, like residential buildings in this style, they feature scrolled brackets and deep projecting roof cornices. Other details typically found on commercial Italianate buildings are projecting window caps and sills of either brick, stone or wood.

The placement of windows on the upper floors is generally regular and the wall surface is flat. The periodic placement of supporting stone or brick piers on the first floor repeats the spacing between openings on the upper floors. While the storefront is clearly integrated with the upper stories, it is common to find a lintel running the length of the lower story to set it apart.

The individual storefronts between the brick or stone piers generally consist of a cast iron or wood framework within which large shop windows are set. Colors appropriate for the cast iron or wooden features include the subdued earth-tones such as ochre, olive green, putty, slate gray, burnt umber and brick red.

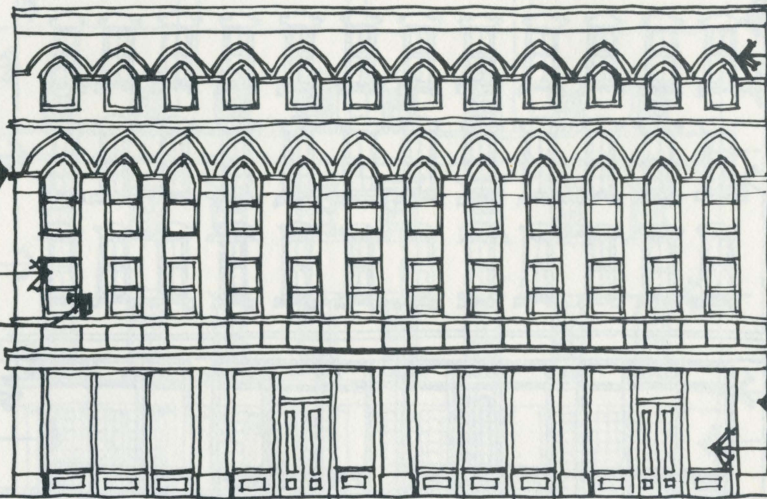


BANDS OF TRIM IN COLORS CONTRASTING WITH WALLS ARE COMMON HIGH VICTORIAN FEATURES

DOUBLE HUNG WINDOWS

RANKED PILASTERS

TRIM, WINDOWS, PILASTERS AND COLORS CREATE A RICH SURFACE TEXTURE ON WALLS



POINTED, "GOTHIC" ARCHES ARE THE MOST COMMON DETAIL OF THIS STYLE

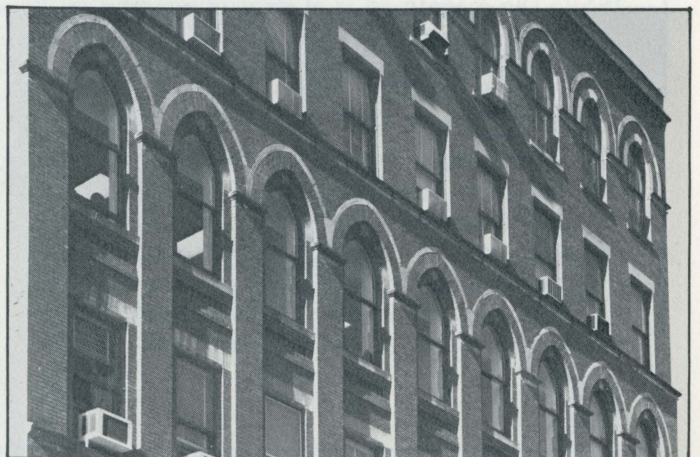
LINTEL

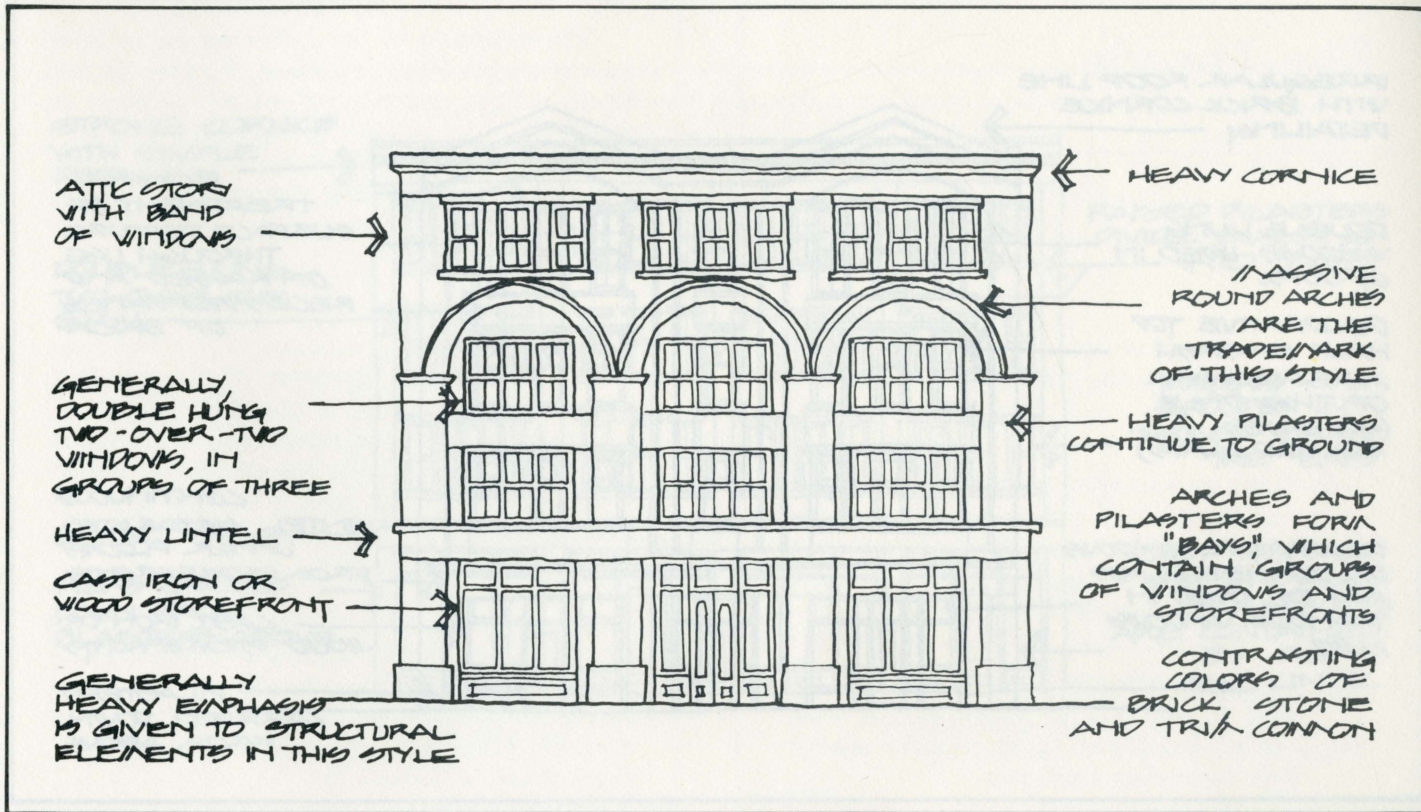
PIERS

TYPICAL VICTORIAN STOREFRONT (MIGHT HAVE POINTED ARCH)

The pointed arch is the most characteristic feature of the High Victorian Gothic style. In Lowell, it is most often used as a window frame and surface decoration. Along with the arch, High Victorian Gothic style buildings can be identified by their richly textured surfaces. It is common to find combinations of different materials on one wall: two kinds of stone may be used, or brick work may be framed by stone borders.

High Victorian Gothic is the first of the Victorian commercial styles to be discussed. In Lowell, buildings constructed during this period (1840-1900) share several common features. Almost all the buildings are rectangular blocks which are horizontally divided into three tiers — a storefront level, the upper floors and a shorter attic story. There is also a three-part vertical division created by grouping two or three windows within a pair of structural piers. The spacing of openings on the upper stories is always carried down to the storefront level. Throughout the Victorian era, this framework remains fairly constant while particular details and styles such as the pointed arch of the High Victorian Gothic Style passed in and out of vogue.





Like other Victorian commercial buildings, those built in the Romanesque style are organized into three distinct horizontal tiers and three distinct vertical sections known as bays. The spacing of openings on the upper floors is carried down to and repeated on the storefront level.

The use of the rounded arch is what gives this structure its character and distinguishes it as a Romanesque Revival building. Often rising to a height of 2 or 3 stories, these arches rest on wide pilasters which divide the facade into vertical bays. Romanesque designs typically emphasize structural elements: columns, lintels, pilasters and arches are wide and heavy, creating an impression of weight and massiveness.

As with Victorian Gothic style buildings, it was common to use several different materials on the same wall. An expanse of brick surface will often be broken by bands or decorative elements sculpted in lighter or darker colored stone.



IRREGULAR ROOF LINE
WITH BRICK CORNICE
DETAILING

DOUBLE HUNG
WINDOWS USED IN
GROUPS

DECORATIVE TOP
HALF OF SASH
A TRADEMARK
OF THIS STYLE
(SOMETIMES
STAINED GLASS)

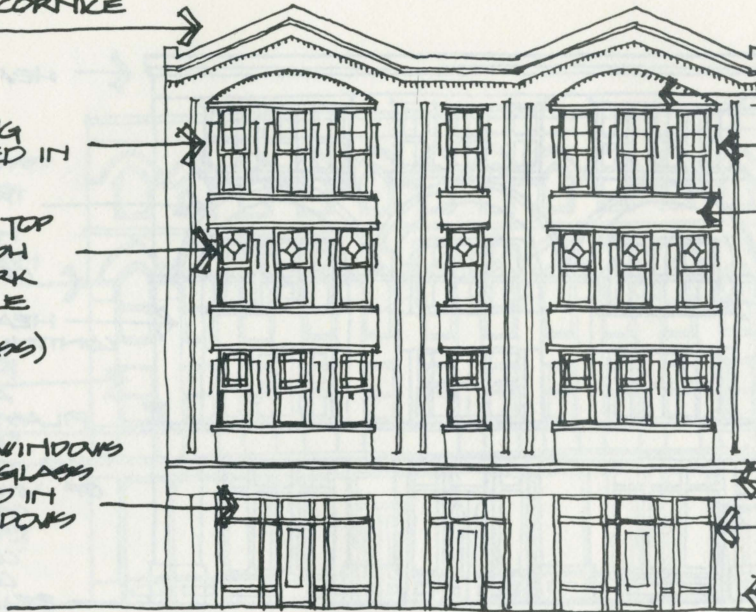
DECORATIVE WINDOWS
OR STAINED GLASS
MAY BE USED IN
TRANSOM WINDOWS
ALSO

PLAYFUL
TREATMENT OF
SURFACE TEXTURE
THROUGH USE
OF RAISED AND
RECESSED PANELS
OF BRICK

CONTINUOUS
LINTEL SEPARATES
UPPER FLOORS
FROM STOREFRONTS

CAST IRON OR
WOOD STOREFRONTS

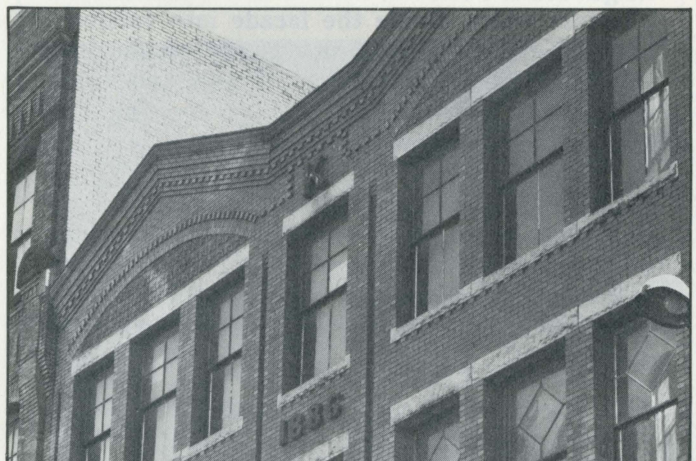
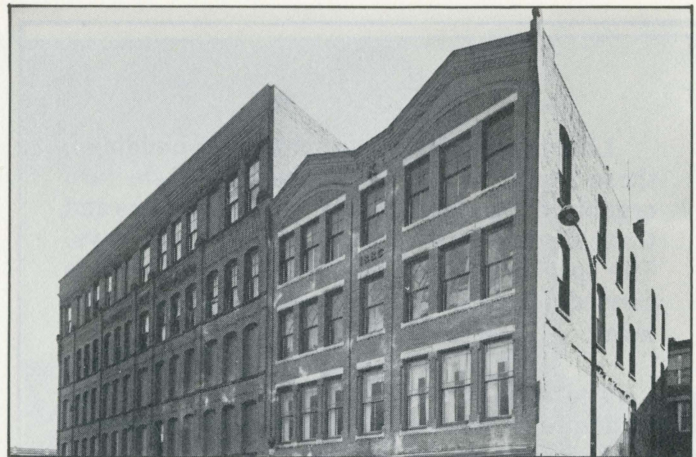
PLASTER
CARRIED DOWN
FROM ABOVE

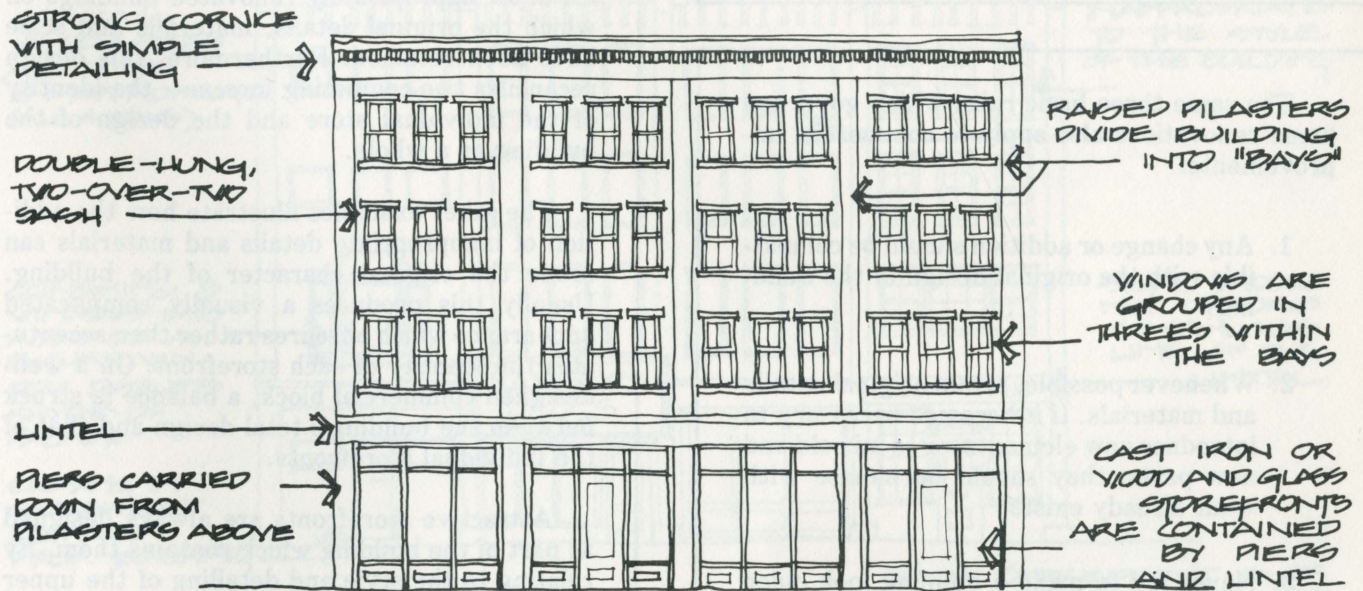


As with other Victorian commercial buildings in Lowell, Queen Anne buildings have a three-part vertical division with supporting piers framing groups of two or three windows. These piers are carried down to the first floor and the individual shops are contained within them. The buildings also have a distinct three-part horizontal division consisting of a storefront level set off by a wide lintel, upper floors and an attic story.

One of the most distinguishing features of Queen Anne buildings is an irregular roofline. If the building is brick, as many are in Lowell, the cornice will be ornamented with brick detailing. Also characteristic of this style is a highly textured exterior surface produced through the use of raised and recessed panels of brick.

Windows are generally the decorative elements in the design of a Queen Anne building. On the upper floors, double-hung sash is used as in other Victorian styles, but the top half of the sash frequently is divided into small decorative panes, sometimes of stained glass. This treatment is often carried down to the storefront level, where the transom windows above the storefront windows may be treated decoratively.



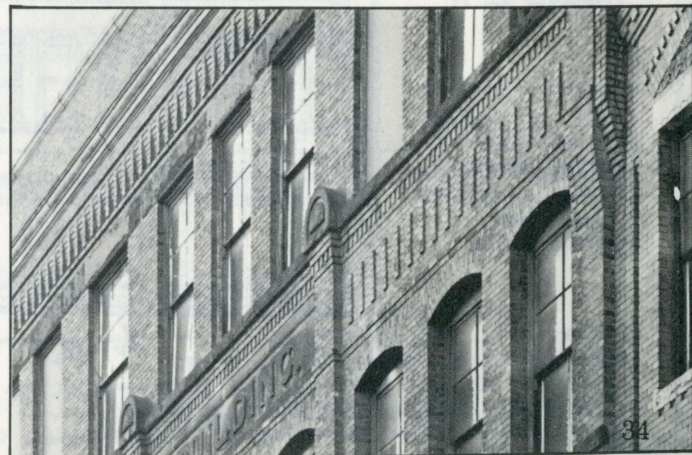
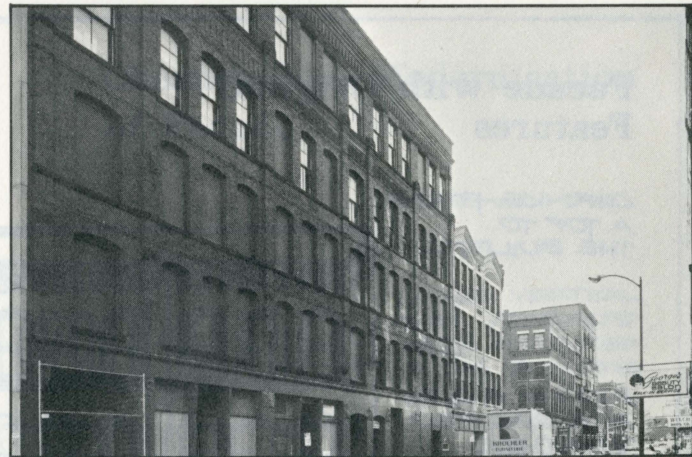


Many of the Victorian commercial buildings in Lowell reflect several stylistic trends. These buildings exhibit a wonderful individualism which gives them a charm and character impossible to duplicate today.

Despite the eclecticism of these buildings, the organization of their facades is similar to that of other Victorian commercial buildings in Lowell. Facades are divided horizontally into three layers — a store-front level, the upper floors, and an attic level. They are also divided vertically into bays, divided by pilasters and containing groups of two to three windows each.

In general, Victorian Commercial Style buildings are built in brick with double hung two-over-two sash. Cast-iron fronts on the first floor are contained in each of the bays, defined on this level by masonry piers carried down from the pilasters above and by the continuous lintel separating the first and second floors.

Victorian Commercial Style buildings comprise much of the fabric of downtown Lowell. The popularity of this style coincided with the period of greatest civic and commercial growth in Lowell. Many of the buildings lining Middle Street, such as the Balfour Printing Co. shown at right, are excellent examples of this style.



DESIGN GUIDELINES

The Facade

The same three basic rules which governed home renovations also apply to commercial improvements:

1. Any change or addition should be compatible with the original design of the building.
2. Whenever possible, retain original details and materials. If it becomes necessary to introduce new elements, or to mix old and new parts, they should harmonize with what already exists.
3. Never try to make a building look older than it really is by using details from earlier periods. The result will always look somewhat artificial.

The examples on the following pages illustrate a range of design options. Figures 1A and 2A show appropriately renovated buildings on which the original details, materials and scale have been retained. Furthermore, this design reconciles two competing forces — the identity of the individual store and the design of the building as a whole.

The other examples illustrate how the addition of inappropriate details and materials can erode the original character of the building. Usually this produces a visually complicated appearance which obscures rather than accentuates the identity of each storefront. On a well-designed commercial block, a balance is struck between the building's total design and that of the individual storefronts.

Attractive storefronts are always designed as part of the building which contains them. By relating to the style and detailing of the upper floors, the storefront becomes an integral part of the total building and actually makes a bolder, more cohesive statement.

Facade with Original Features

FIG. 1A
YES

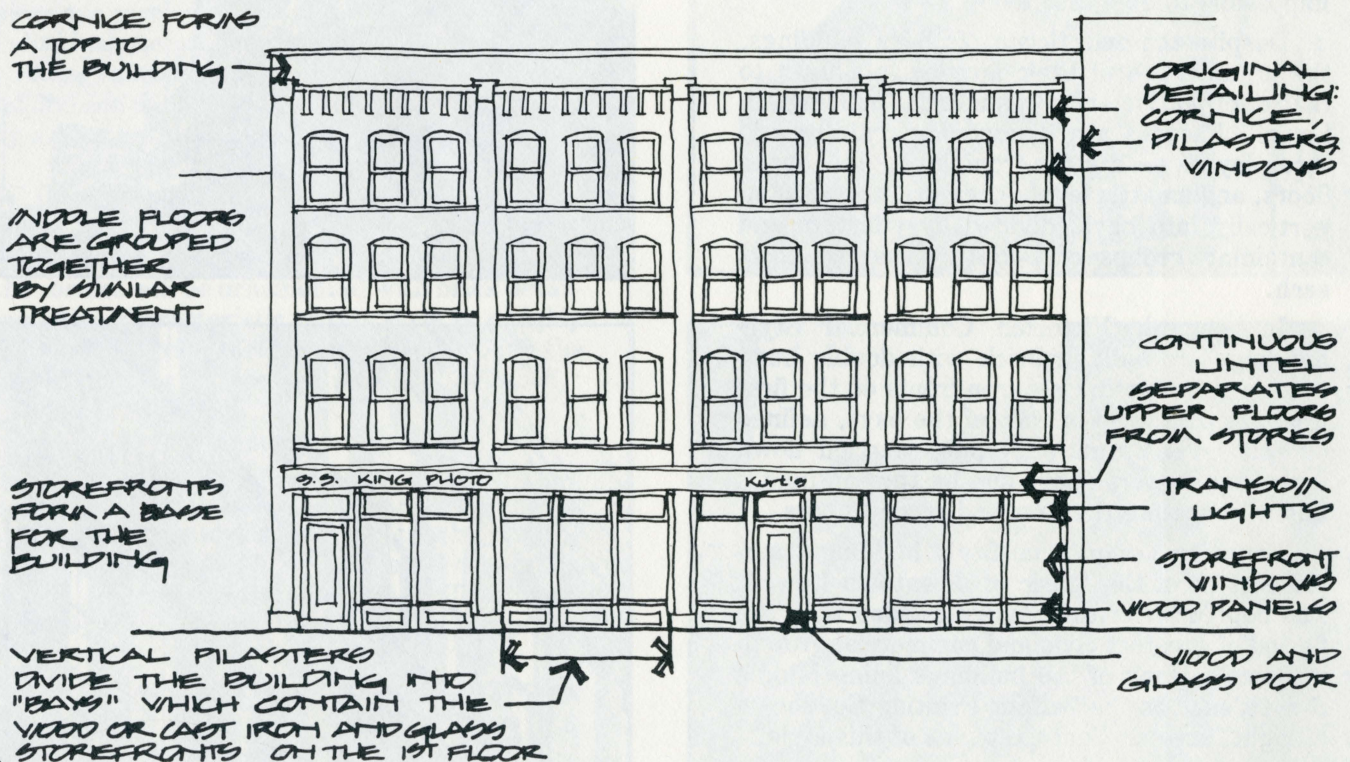


FIG. 1B
NO

Conflicting Treatments Disrupt Facade

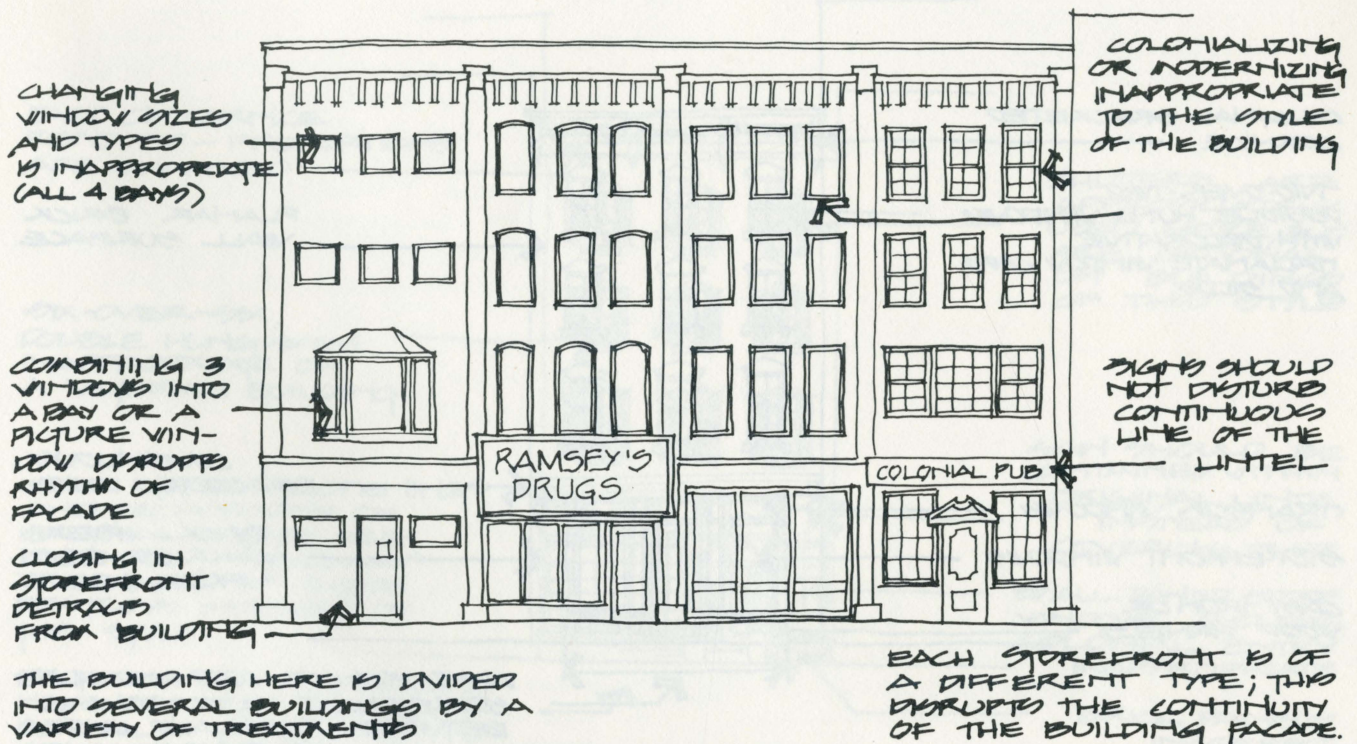
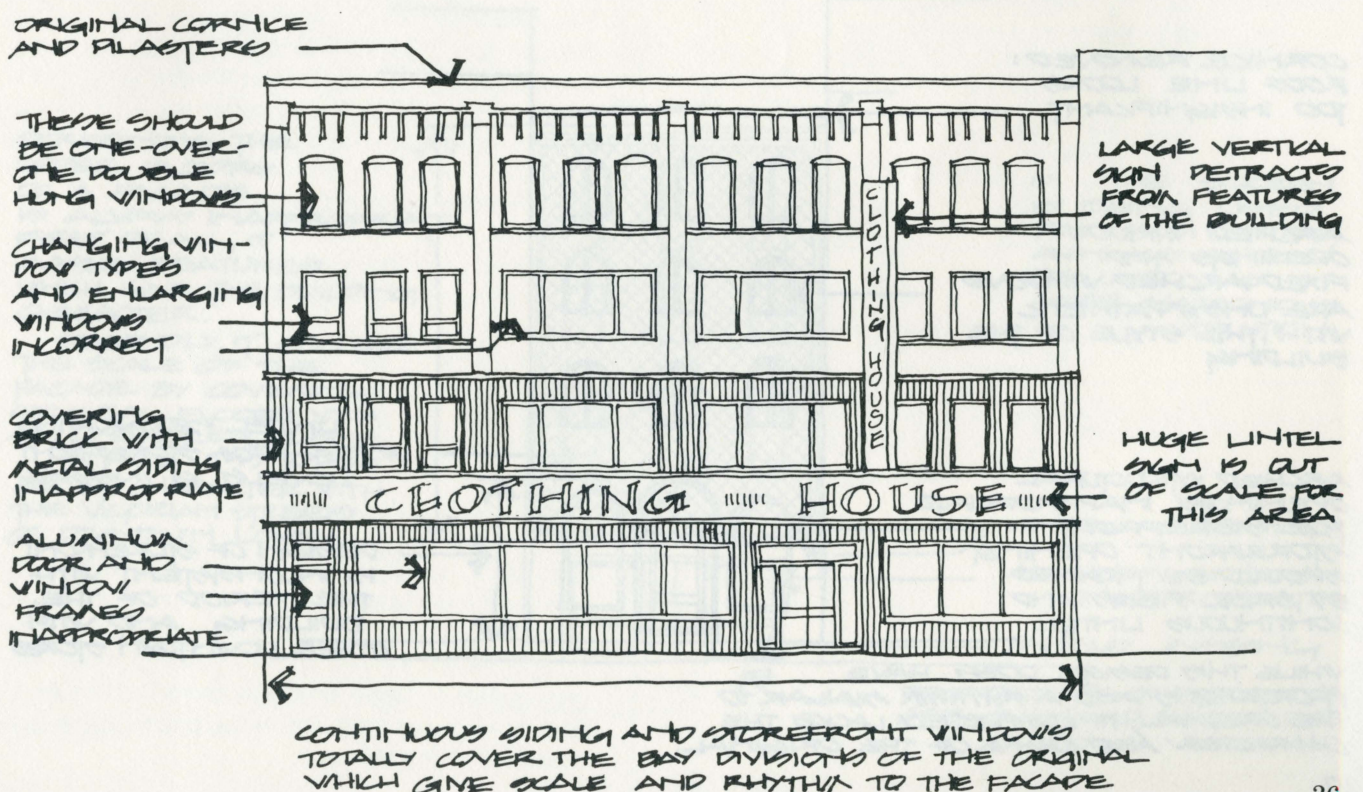


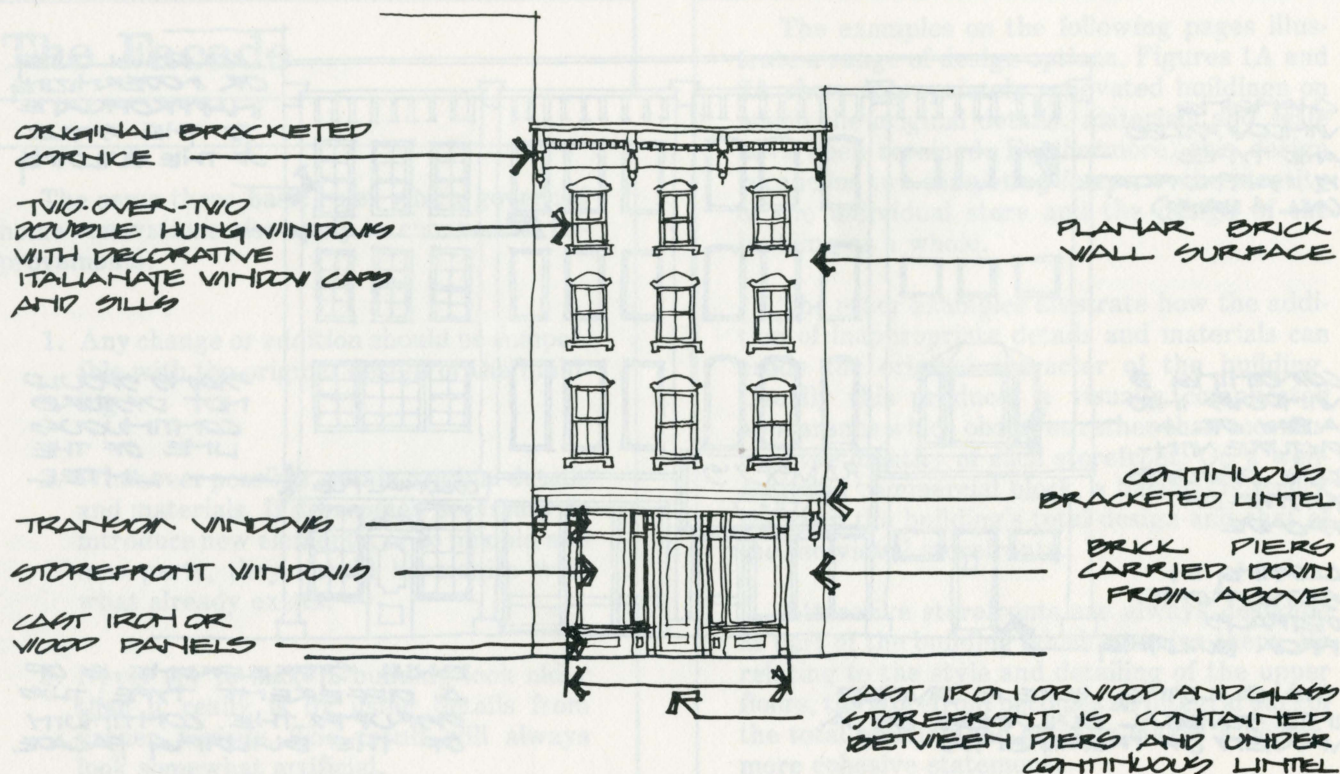
FIG. 1C
NO

Characterless Modernization of Facade



Facade Retaining Original Detail

FIG. 2A
YES



Unsympathetic Remodeling of Facade

FIG. 2B
NO

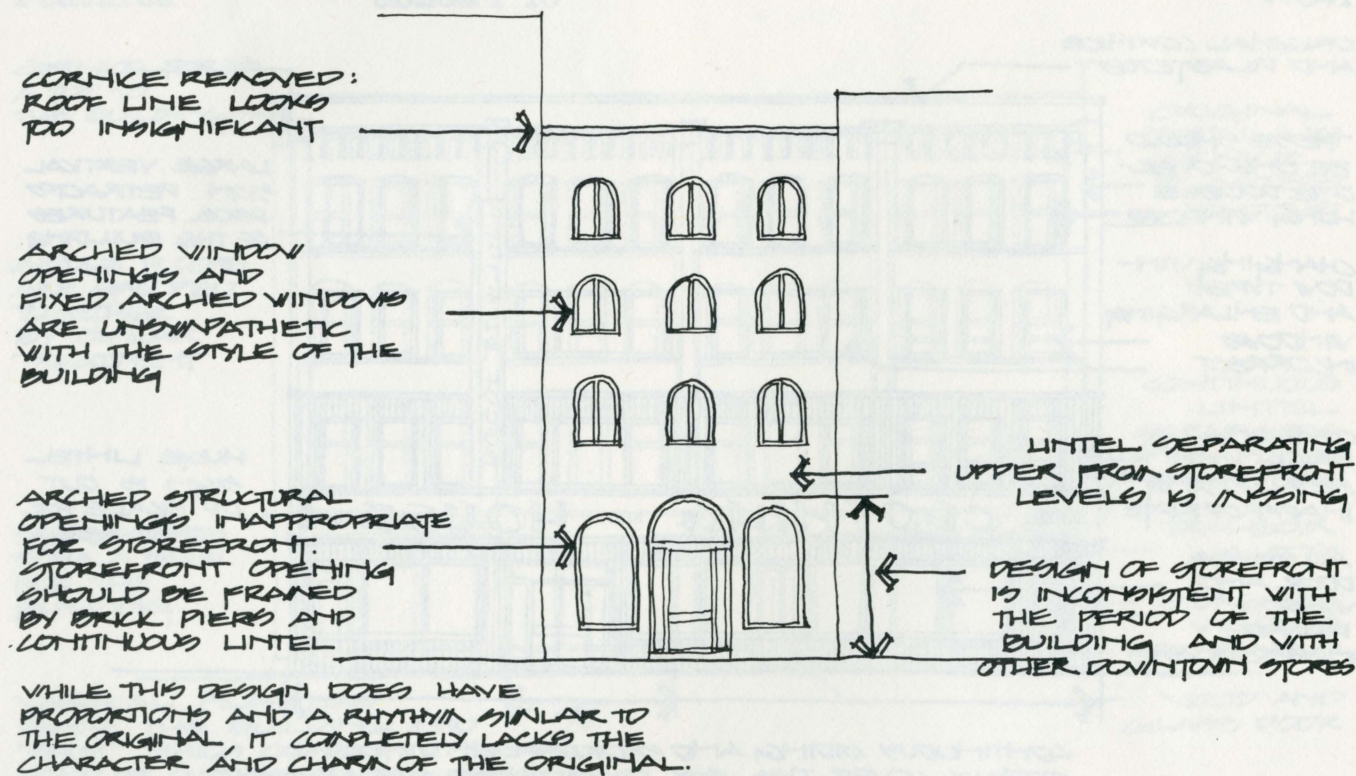


FIG. 2C
NO

Inappropriate Colonializing of Facade

PART OF CORNICE
REMOVED - PROPORTIONS
ARE CHANGED

SIX-OVER-SIX,
DOUBLE HUNG SASH
INAPPROPRIATE ON
A VICTORIAN BUILDING

WHILE GENERAL OPENINGS
AND PROPORTIONS OF
ORIGINAL FACADE ARE
RETAINED "COLONIAL"
TREATMENT OF THESE
DESTROY'S INTEGRITY OF
THE STYLE.

PROPORTIONS OF STOREFRONT,
HOWEVER, ARE CHANGED BY
REMOVAL OF BRICK PIER AND
CHANGES IN WINDOW PROPORTIONS.



SHUTTERS ARE
APPROPRIATELY
USED HERE, BUT
ARE OPTIONAL
ON BUILDINGS
OF THIS STYLE

SIGN SHOULD BE
CONTAINED WITHIN
ORIGINAL LINTEL,
INSTEAD OF
COVERING IT UP.

SMALL PANELED STORE
WINDOWS AND FAKE
COLONIAL ENTRY
INAPPROPRIATE

BRICK PANELS
INCORRECT;
SHOULD BE WOOD

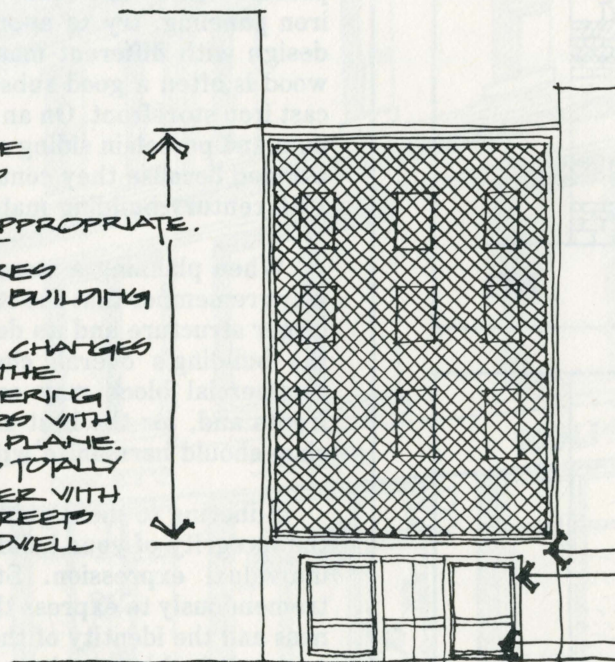
FIG. 2D
NO

Characterless Screening of Facade

SCREENING THE
UPPER FLOORS
OF A FACADE
IS ALWAYS INAPPROPRIATE.
FIRST OF ALL, IT
HIDES FEATURES
WHICH GIVE THE BUILDING
CHARACTER.

SECONDLY, IT CHANGES
THE SCALE OF THE
FACADE BY COVERING
SEVERAL FLOORS WITH
AN UNBROKEN PLANE.

FINALLY IT IS TOTALLY
OUT OF CHARACTER WITH
THE VICTORIAN STREETS
OF DOWNTOWN LOVELL



IF THE SCREEN
IS BEING USED
FOR SUN CONTROL,
ANYTHING SHOULD
BE USED AS A
MORE HARMONIOUS
SOLUTION.

LINTEL MISSING

ALUMINUM WINDOWS
INAPPROPRIATE

PANELS MISSING

PROPORTIONS OF STOREFRONT
ARE CHANGED, SHOULD BE
MORE VERTICAL

Storefronts

A storefront design should clearly project the product or service being offered inside. This communication is accomplished by means of signs, logos, symbols, displays and the use of exterior surface materials and colors. While the storefront is but one of the many variables which affect business, an attractive storefront will always reinforce a successful venture.

Your storefront's original design is the best blueprint for a renovation project. Reduced to its essential elements, the storefront is actually defined by a horizontal lintel and two vertical piers. In any renovation, these features should always be retained. The width of the storefront pier should approximate the spacing between openings on the upper floors. In this way, each level will relate to the other and the building will "read" as a unified whole. Similarly, the lintel which defines the top of a storefront should never be removed or altered. This horizontal strip unifies the facade and gives "scale" to the street frontage of a building.

Original details and materials should always be retained. Decorative features such as columns or brackets which are often repeated across the face of a building give unity and character to your storefront. If it is impossible to preserve these and other features such as cast iron paneling, try to approximate the original design with different materials. For instance, wood is often a good substitute for an original cast iron storefront. On an older building aluminum and porcelain siding or detailing should be avoided because they contrast too greatly with 19th century building materials.

When planning a storefront renovation, always remember that the storefront is a part of a larger structure and its design should relate to the building's overall character. Secondly, a commercial block may contain several storefronts and, for the best effect, each individual shop should harmonize with its neighbor.

Adhering to these guidelines and respecting the integrity of your building need not restrict individual expression. Storefronts can vary tremendously to express the nature of the business and the identity of the owner. This can be accomplished by the introduction of small elements such as signs, awnings and window boxes. The drawings on the following pages show four excellent renovations.

Coffee Shoppe

NO

DISCOUNT
DRUGS

NO

N.G.B.

NO

The Spaniard

NO

BEFORE

Storefronts Detract from Character of the Building



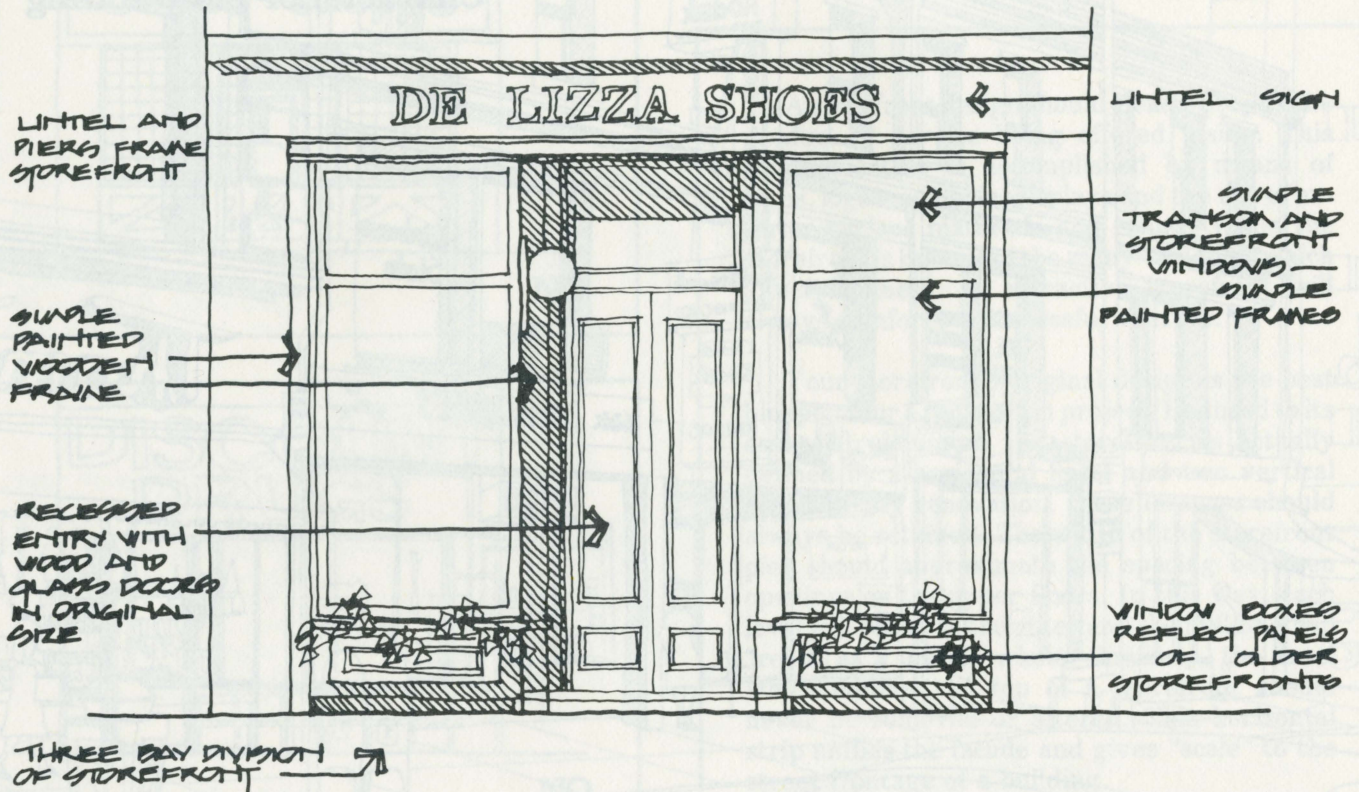
AFTER

Storefronts Reinforce Design of the Facade



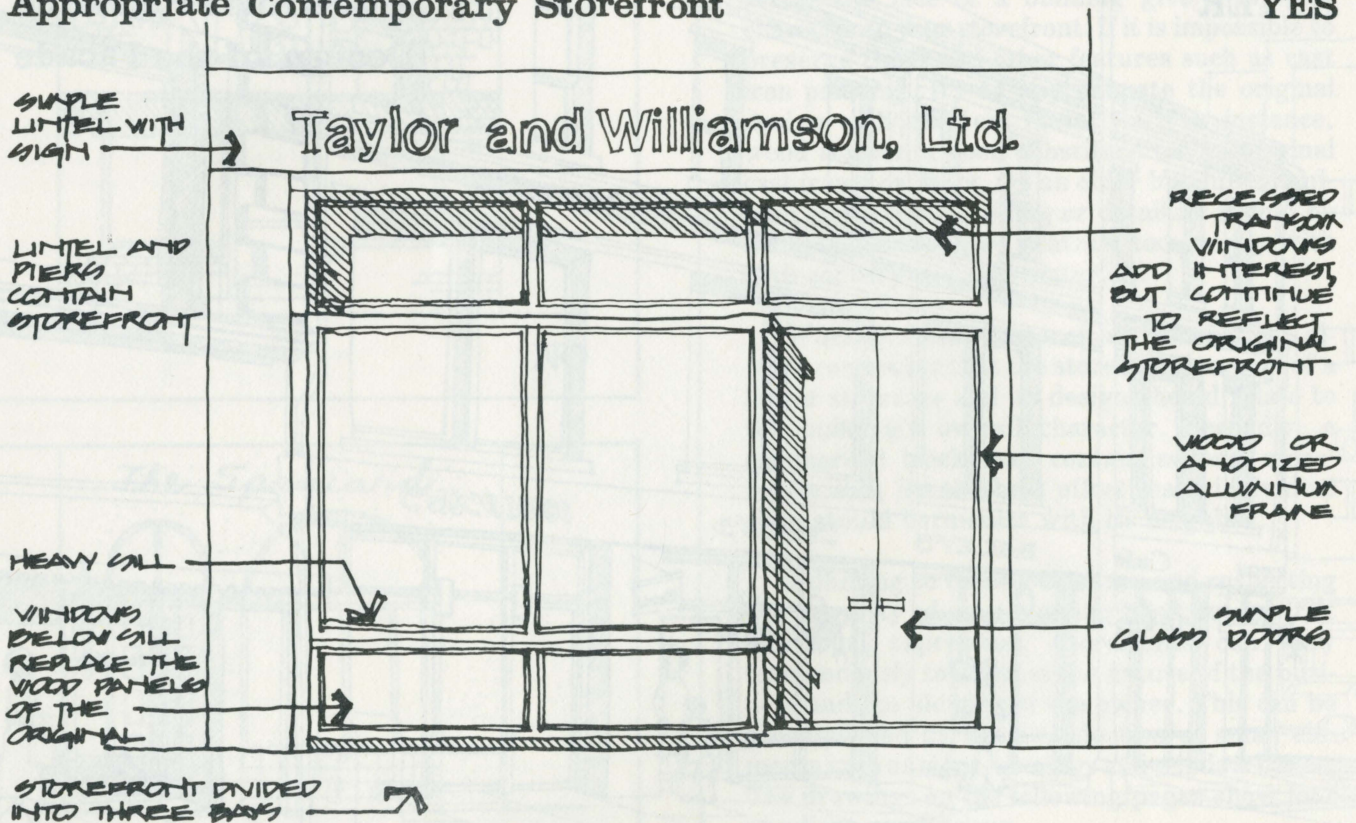
Simplified Traditional Storefront

YES



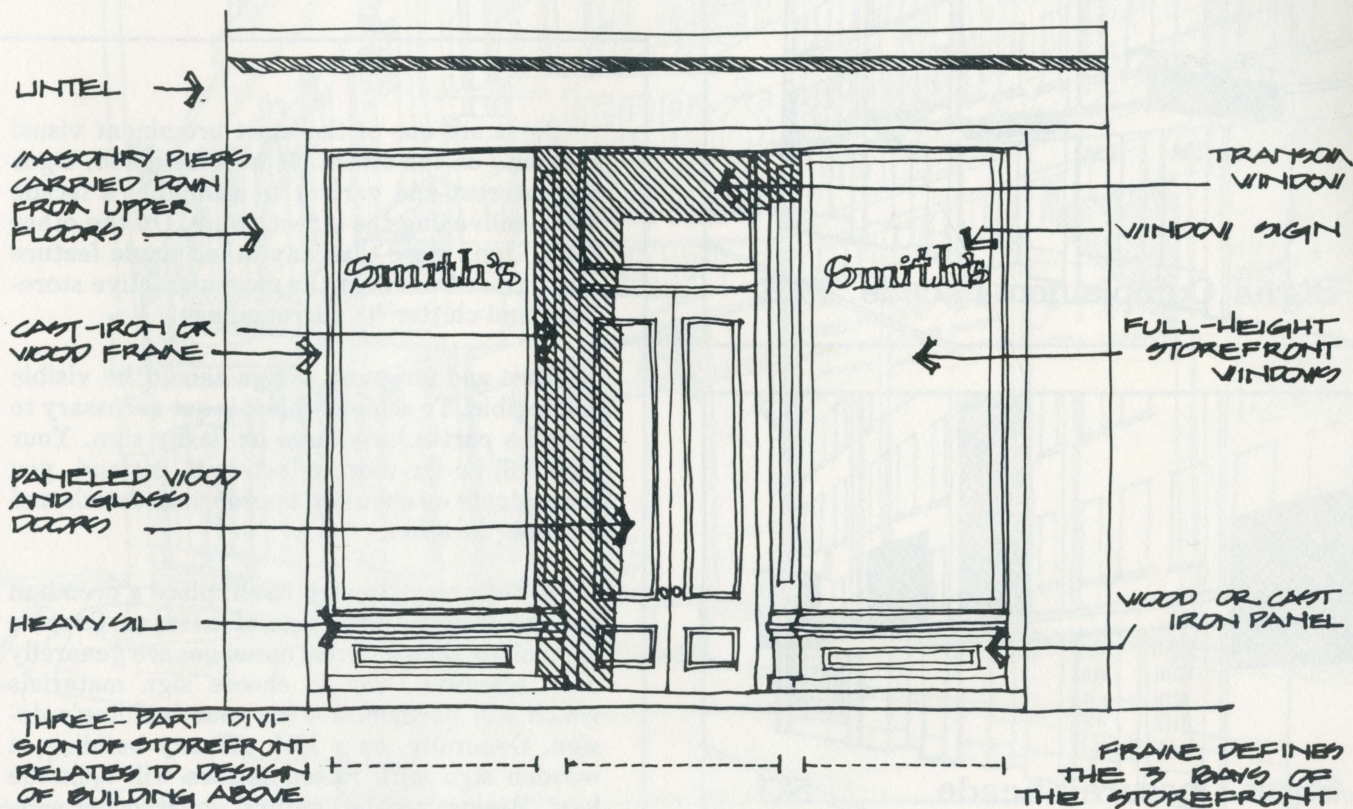
Appropriate Contemporary Storefront

YES



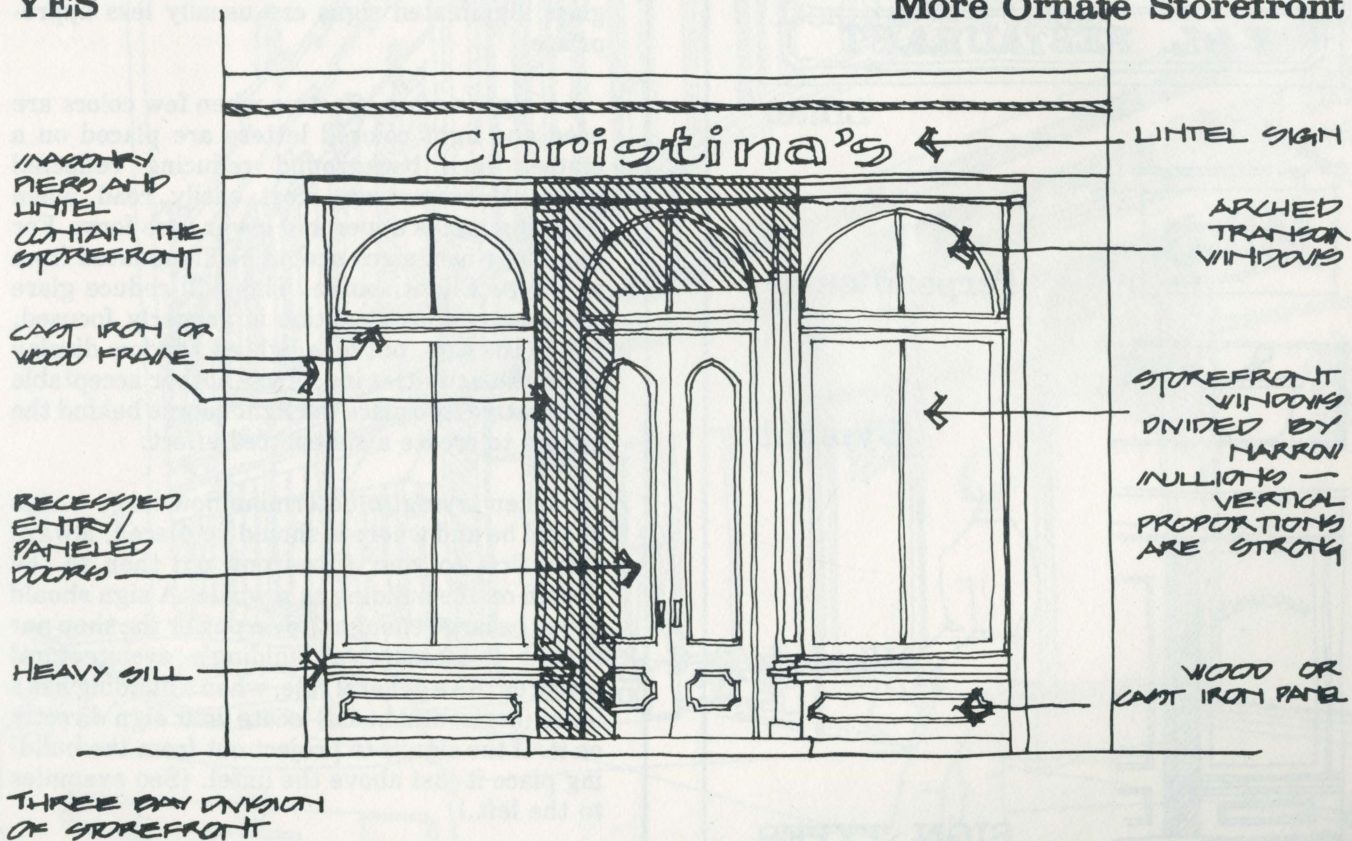
YES

Common Traditional Storefront

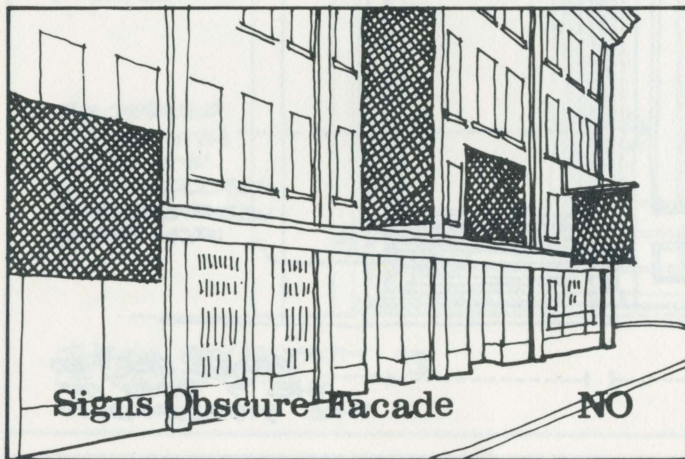
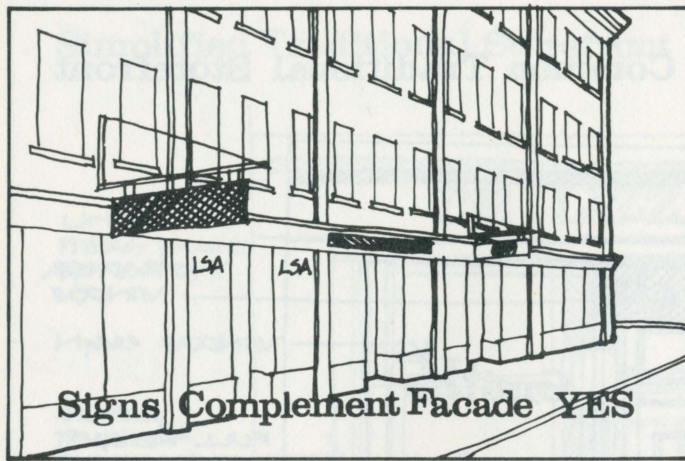


YES

More Ornate Storefront



Signs



Signs are one of the most prominent visual elements on the street. If well designed, signs add interest and variety to a building's facade while enlivening the street scene. On the other hand, signs more than any other single feature can detract from even the most attractive storefront and clutter its surroundings.

First and foremost, a sign should be visible and legible. To achieve this it is not necessary to install a particularly large or flashy sign. Your sign will be far more effective if, instead, you concentrate on choosing appropriate details and a proper location.

In designing the sign itself, place a premium on simplicity and directness of message. Graphic symbols or simple verbal messages are generally most effective. Try to choose sign materials which will harmonize with your building's design. Generally, on a 19th century building, a wooden sign with raised letters will look the best. Besides treated natural wood, other suitable sign materials which can best withstand the variances of the New England climate include metal or plywood, prepared and painted. Plastic signs with applied or integrated lettering and glass illuminated signs are usually less appropriate.

A sign is most effective when few colors are used and light colored letters are placed on a matte, dark background reducing reflected glare. Messages are most easily read when lettering mixes upper and lower case form. For nighttime use, signs should be illuminated from an indirect light source. This will reduce glare and ensure that attention is properly focused, not on the sign, but on a lighted window display or on the activities indoors. Another acceptable alternative is to place the light source behind the letters to create a silhouetted effect.

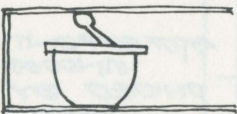
When trying to determine how large a sign should be and where it should be placed, always refer first to your storefront and then to the design on the building as a whole. A sign should never be large enough to overpower the shop nor should it obscure a building's architectural features. As a general rule, when a building has a lintel (horizontal beam) locate your sign directly on it. If the sign is to project out from the building place it just above the lintel. (See examples to the left.)



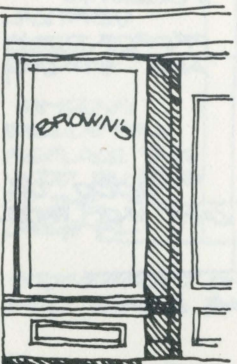
Lintel



Perpendicular



Symbol

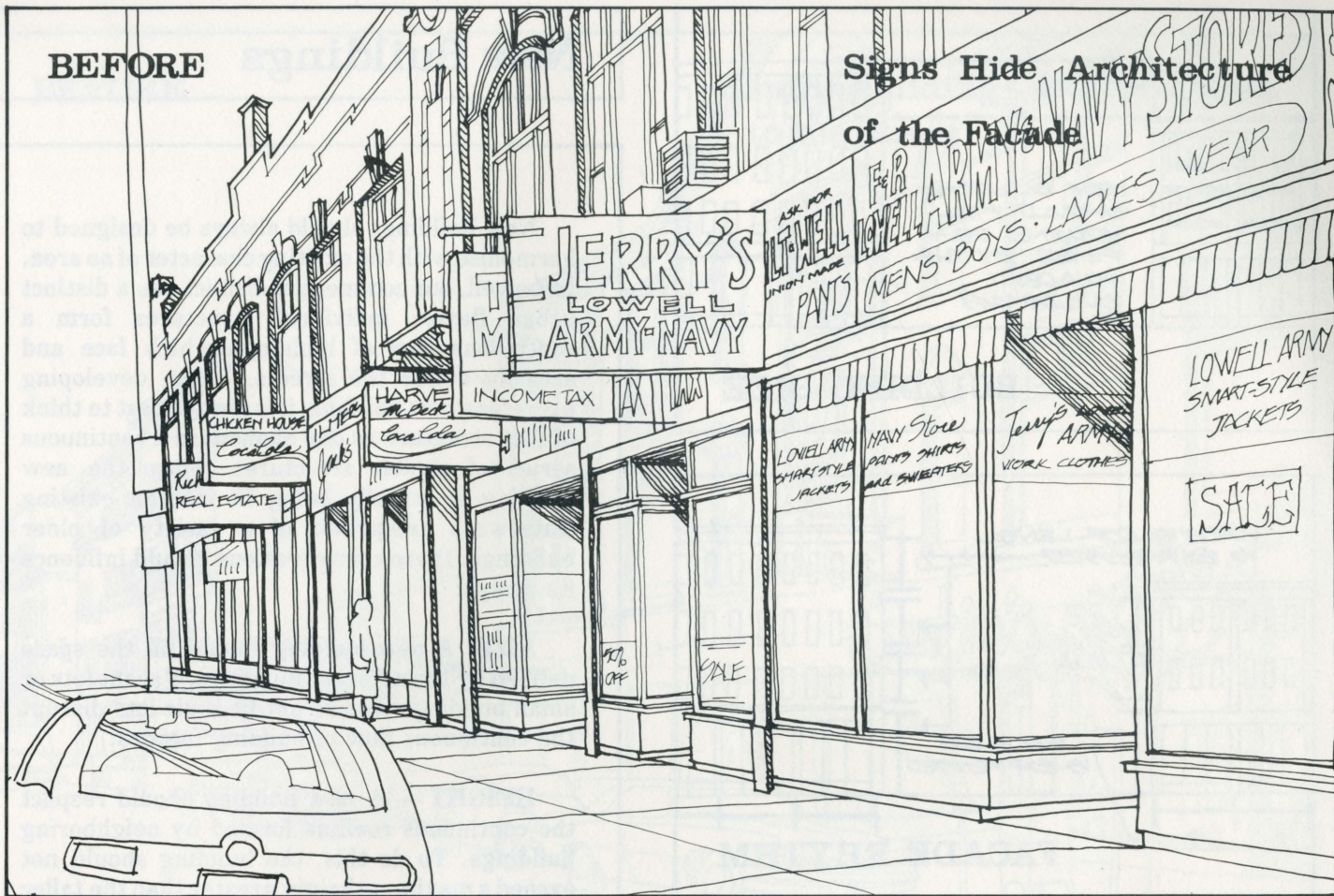


Window

SIGN TYPES

BEFORE

**Signs Hide Architecture
of the Facade**



AFTER

**Appropriate Signage Enhances
Design of Facade**



New Buildings

NEW BUILDING
SHOULD FILL
VOLUME DE-
FINED BY THE
ADJACENT
BUILDINGS

BUILDING SIZE

EACH FLOOR LEVEL
IS EXPRESSED

EACH BAY
IS EXPRESSED

FACADE RHYTHM

VERTICAL WINDOW
PROPORTIONS TYPICAL

OPENINGS NOT
MORE THAN
33% OF FACADE

VERTICAL BAY
PROPORTIONS

FACADE OPENINGS

INFILL BUILDING

New buildings should always be designed to harmonize with the existing character of an area. In Lowell, our commercial district has a distinct urban flavor; individual structures form a continuous row of buildings which face and actually define the streets. When developing plans for a new building, it is always best to think of that structure as one element in a continuous series of similar structures. Since the new building is actually being fit into an existing framework comprised of a variety of older buildings, these considerations should influence its design:

SIZE: A new building should fill the space defined by the adjacent buildings. Vacant lots or small buildings that do not fit their lots disrupt the continuous flow of building facades.

HEIGHT — A new building should respect the continuous roofline formed by neighboring buildings. To do this, the building should not exceed a maximum height greater than the taller of the two adjacent structures. Similarly, the minimum height should not be less than the lower of the two adjacent structures.

FACADE RHYTHM — Along a street, the repetition from building to building of similarly positioned door and window openings creates a rhythm which should be repeated on the face of a new building. The floor to ceiling height of a new building should correspond to the dimensions on neighboring buildings. Also, on a new building, window and door openings should be positioned like the arrangement on neighboring structures.

FACADE OPENINGS — The combined area of openings on the new facade should not exceed 3% of the total facade area. Respective openings should be proportioned so that the height is at least twice the width but never more than three times. Smaller basement and attic windows may be excluded from this restriction as may singular architectural features such as doors and bay windows.

These guidelines in no way preclude developing a contemporary design for new buildings. In fact it is almost never advisable to design a new building to look like an older one.

BEFORE

**Infill Buildings Inappropriate
to the Street**

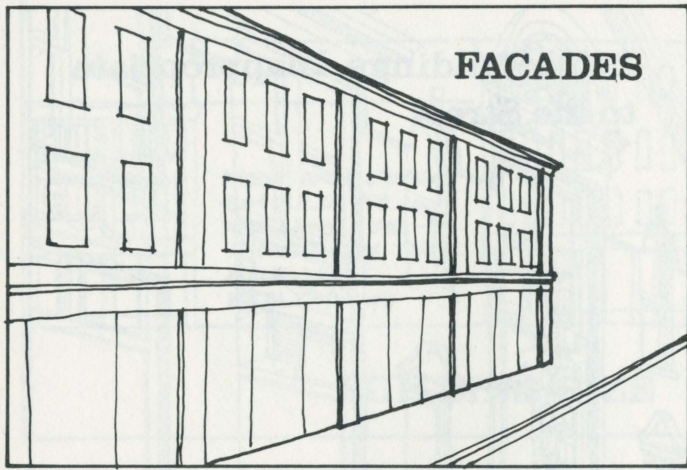


AFTER

**Infill Buildings Reinforce
the Scale of the Street**



FACADES



STOREFRONTS



SIGNS



PUBLIC IMPROVEMENTS



Streetscape

Combine man-made elements such as buildings, fences, lights and streets together with natural elements like trees and grass. Add to this, a few cars, some pedestrians, a dog or two, and you have a streetscape. Two things determine the quality and flavor of this setting: first — the individual elements themselves, the buildings, sidewalks, trees, etc., and secondly, the way in which these elements relate to one another. Because a streetscape is such a diverse entity, improving it requires coordinated public and private efforts.

The City of Lowell has recently undertaken an ambitious downtown revitalization program: trees will be planted, sidewalks widened and repaved, while benches and planters will be installed along with lighting fixtures keyed to the architecture of surrounding buildings and scaled to pedestrian height. These amenities are the very features which have made modern shopping centers so pleasant. By introducing such elements into the downtown, the area will become more vital and attractive to shopper and resident alike.

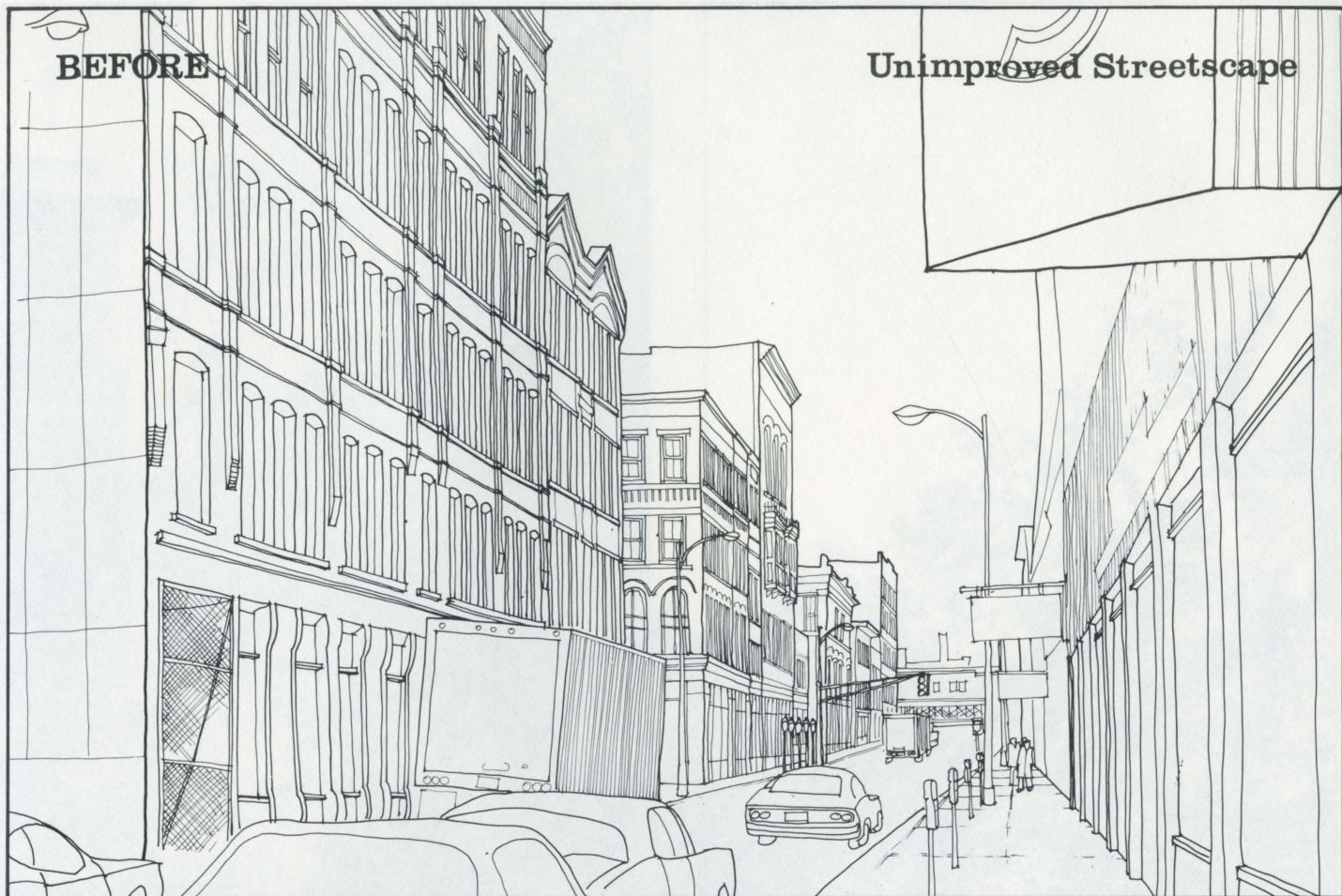
The private sector also has a role to play in this revitalization program. A grant program established by the City to stimulate facade improvements in the downtown has recently been established. To insure compatible and coordinated design and development in the business district, property owners who wish to participate in the facade improvement program will be able to review their plans with staff at the Division of Planning and Development.

Sign control is another streetscape improvement program which will require public and private sector cooperation. In recent years, the proliferation of large, unsightly signs has produced an overhead clutter which greatly detracts from the appearance of our commercial district. To remedy this situation, a sign control ordinance will regulate the size and placement of a sign as well as certain aspects of its design.

These are just a few examples of streetscape improvement projects which can be undertaken either publicly, privately or jointly. Streetscapes are public space but they are part of everyone's shared experience and consequently their appearance and maintenance should be common concern and a collective responsibility.

BEFORE

Unimproved Streetscape

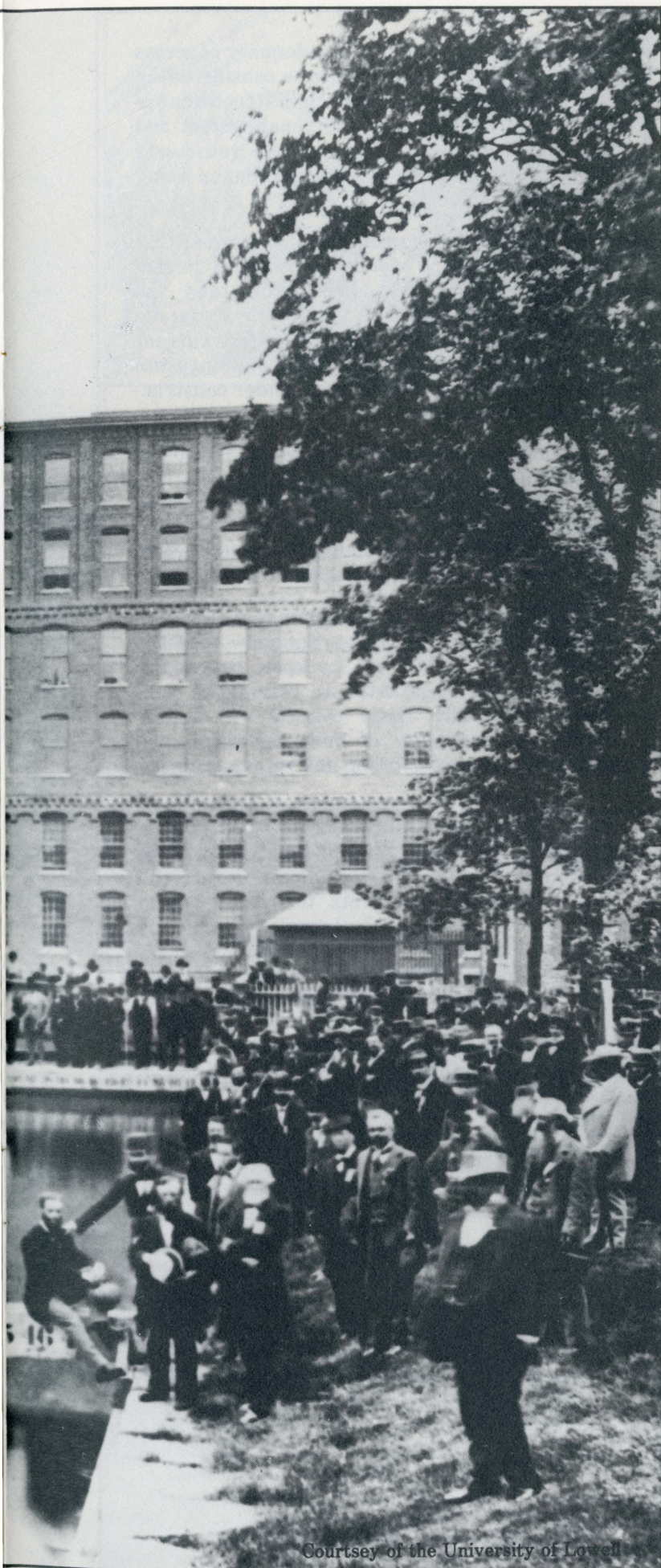


AFTER

**Streetscape Revitalized through
Public and Private Improvements**







Courtesy of the University of Lowell

MILLS

Adaptive Reuse of Mills

Since Lowell's founding, mill property has been a major element in the City's economy and a dominant feature of the environment. It was the textile industry that built the city and earned it international fame as the first successfully planned industrial community. During the period from 1822-1839, 31 miles were constructed under the sponsorship of some 10 different companies. All of the mills were built for the processing of cotton, with one exception, the Middlesex, which processed wool.

During peak production in the early 20th century, there was approximately 25 million square feet of floor space devoted to the production of textiles, providing jobs for about 20,000 people. Shortly after the peak production period, Lowell began to pay the prices for over-dependence on one industry as many of the major companies began migrating to the south where labor, raw materials, and taxes were less expensive.

Today, a major legacy of the textile era is the millions of square feet of unused or underutilized mill space left after the mass corporate exodus of the early 1900's. From an economic standpoint, it would be in the city's best interests to return the mills to some kind of profitable use. Also, from a visual and historical standpoint these buildings are important to Lowell.

Fortunately, mills have tremendous re-use potential. Because the interior spaces are generally large and uncluttered by structural members, architects can be extremely creative when developing new uses for older mill buildings. The space is so flexible that many new uses can be redesigned into the existing building. For instance there are cases of mills being recycled for use as office complexes, schools, retail shopping malls and housing. Many such projects have already been completed. In Peabody, the world's largest leather tannery was converted into a housing complex. Similarly, the original Prince Spaghetti factory on Boston's waterfront is now an apartment complex, while the Windsor Mill in North Adams is being redesigned as a community arts center.

Clearly rehabilitation of every mill structure in the City is not economically feasible. Before considering any reuse for these buildings, they should be professionally evaluated for structural soundness, technological adaptability and envi-

ronmental acceptability. The adequacy of access and parking facilities must also be considered. In addition, since the majority of mill structures are located on the banks of the canal system and close to the downtown area, mill reuse and rehabilitation should complement other on-going revitalization programs.

The original design of the mills suggests that light industry is the best use for many of the mill facilities, notably the Boott Mills and the Massachusetts Mills. A program of facade improvements which would not affect current use should be initiated to tie these buildings into the revitalization projects now under construction in the downtown.

If mills are to be used for industrial purposes, all activities should be clean and non-polluting. Further, industrial use should be compatible with other downtown land uses and attention should be given to improving the exteriors of buildings as well as the interiors.

Housing is often an excellent reuse for mill buildings. The Pilling Mill on Broadway and the Whittier Cotton Mill on Stackpole Street are currently being converted to residential complexes. Hopefully, these projects will demonstrate the feasibility of mill conversion and stimulate interest in other mill re-use projects.

Recognizing the importance of the mills to Lowell, a variety of cultural uses related to the history of the mills themselves are already in the works. Located in a working textile mill, the Lowell Museum interprets the technological and social history of Lowell. Architects renovated ten thousand square feet on the first floor of a building in the Wannalancit Manufacturing Company's complex for the museum. Financed by a combination of public and private funding, this new educational facility co-exists with textile production on the upper floors of the mill building.

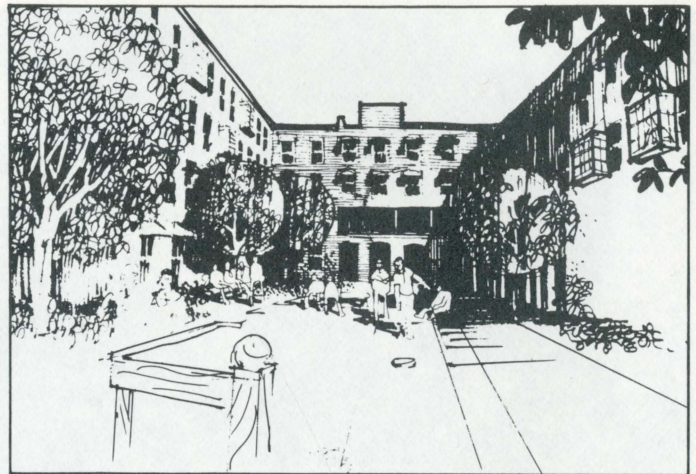
The Museum is one component of extensive plans for an Urban Cultural Park in Lowell. The Lowell National Historical Park, currently in the planning stages, is an ambitious plan for the preservation, interpretation, development and use of the historic, cultural and architectural resources of Lowell.

Lowell is not the only city faced with the problem of finding a re-use for its industrial property. With labor and material costs skyrocketing, developers and investors are turning to existing structures because recycling buildings is proving to be less expensive than new construction. At the same time, re-use of existing buildings is an excellent strategy for preserving our historical and cultural heritage.



STACKPOLE STREET MILL

This late 19th century steam-powered cotton mill is being imaginatively renovated for approximately 40 units of elderly housing. Convenient to retail shopping areas and public transportation, the Stackpole Street Mill will provide a pleasant addition to the housing stock in Lowell.



FRANCIS GATEHOUSE

Public and private interest combined to produce this first example of new uses for old industrial buildings in Lowell. Redesigned to accommodate 90 units of elderly housing, this complex shares its dramatic setting along the Pawtucket Canal with the historic Francis Flood Gate, a node in the State Heritage Park.



The Customs House Block on the waterfront in Boston, recycled by Anderson Notter Associates to accommodate a mixture of residential, office and retail spaces, demonstrates the dramatic possibilities old spaces have for new uses.

Courtesy of the Phokion Karas





Courtesy of Scannell Boiler Works

TECHNICAL INFORMATION

Introduction

Whether completely renovating an older building, or simply maintaining one, the information on the following pages will help you get started. Once your house is in good shape, adopt a strategy of preventive maintenance. Attending to repairs **when** needed and **before** deterioration occurs will always save you time and money.

Water, sunlight and air are the forces primarily responsible for building damage. Wood when dampened will rot as microorganisms feed on it. Stone and brick mortar absorb water and then split when the moisture freezes. Roofing, cornices, siding and foundations can all be damaged by water erosion. Water vapor, ultra-violet rays from the sun and air pollutants cause paint to deteriorate.

To combat these forces here are three basic rules to follow when renovating a building:

1. Use quality materials which are not easily damaged.
2. Seal materials (i.e., paint, caulk, flash) so water cannot easily reach them.
3. Shape materials so water will not seep in but will run off.

Some basic facts and helpful hints on the following are included in this section:

1. Siding Materials: pros and cons of various materials and some hints on maintenance.
2. Masonry: comparison of masonry cleaning techniques and facts on repointing and replacing bricks.
3. Painting and Color: reasons for paint deterioration, hints on caulking, recommended types of paint, and a color/style chart.
4. Roofing/Flashing/Gutters: facts on roofing deterioration and replacement and hints on flashing and gutters.
5. Details: ways of restoring or replacing trim, hints on weather-stripping, and suggestions on storm windows and doors.

Siding Materials

Siding functions as a protective skin enclosing the structure of a building and insulating the interior from excesses of heat, cold and moisture. The maintenance of this "skin" or lack of it, not only significantly affects the appearance of your building, but is one of the largest individual decisions affecting the investment your building represents. Most property owners will sooner or later be faced with the task of repair or replacement of sidings.

CLAPBOARD

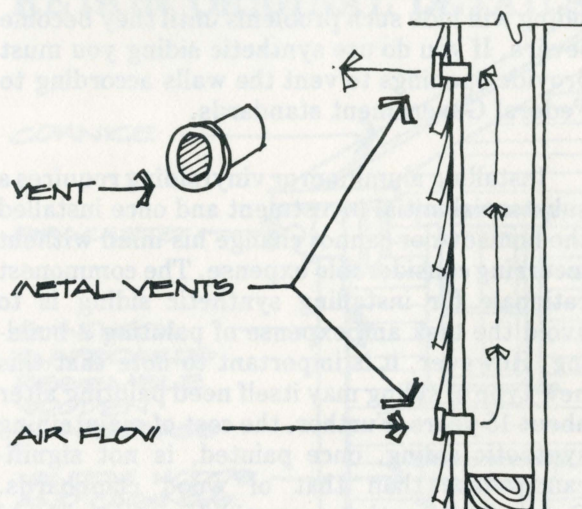
The most popular type of exterior covering for many of Lowell's early buildings was narrow wood clapboard siding attached to a layer of wood sheathing which, in turn, was nailed to the framework of the building.

Though inexpensive and relatively durable, clapboard siding requires regular inspection and maintenance to keep it in proper condition. But even if a wall of clapboards seems deteriorated beyond repair, the situation probably looks worse than it actually is. Most clapboard siding can be rejuvenated with a few simple techniques and considerable patience.

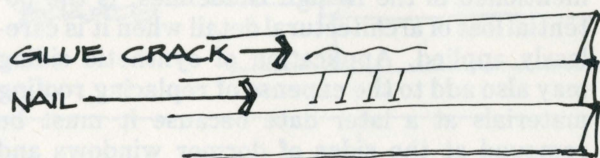
Split clapboards can be repaired by prying open loose pieces with a putty knife and applying strong wood glue along the edges of the crack. Press the sections back together and hold them in place with several finishing nails placed under and up into the split areas. Allow the glue to harden before removing any nails. Smooth the surface with putty or wood filler, let dry, and then apply one or two coats of primer-type paint.

With luck and persistence, a homeowner can sometimes coax warped clapboards back into position. Convex bulges are remedied by drilling several holes along the center of the board and then inserting wood screws. The screws are gradually tightened causing the board to regain its original shape. To avoid splitting the wood, wet the board several times during this process.

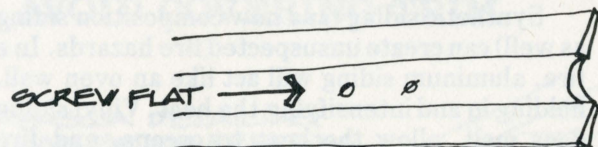
VENTING CLAPBOARDS



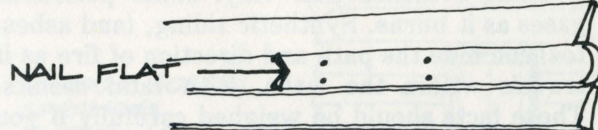
REPAIRING CLAPBOARDS



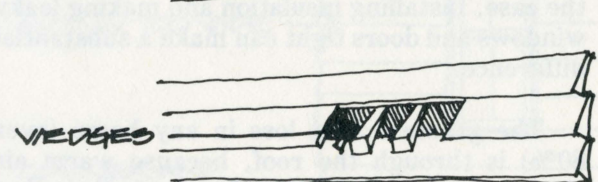
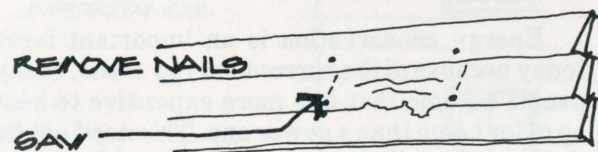
Cracked Board



Convex Board



Concave Board



Replacing part of a Board

Concave boards can sometimes be straightened by drilling two sets of holes along the board. Finishing nails are driven into these holes to unwarpage the clapboard.

All screws and nails should be countersunk (recessed below surface level). These recesses are filled with putty to achieve a smooth surface.

Sections that appear especially ragged or rotten can be replaced. Locate the damaged section and make several vertical cuts through the board with a small saw. Next, remove all nails within the involved portion and also the nails in the boards directly above.

The damaged board or boards can now be taken out in pieces with a hammer and wood chisel. After all visible wood has been removed, insert a few wedges under the remaining upper board. Now pry out any additional left over pieces.

If tar paper is present between sheathing and siding, be sure to patch any holes and visible tears with asphalt cement.

The final step involves cutting a length of matching clapboard to fit the gap. Remove the wedges, slip the new board into position and reinstall the nails. Putty or wood filler should be applied over the new seams.

SHINGLES

Locally wood shingles did not achieve wide popularity as a siding material until about the middle of the 19th century, when builders of Queen Anne, Stick Style and Shingle Style homes created inventive patterns on the surface of the building often using different shaped shingles. This special surface texture should be preserved as it is an irreplaceable element of the building's style.

As with clapboard, deterioration of shingles is seldom so severe as to require total replacement; single shingles can be removed and replaced when necessary.

In recent years the application of shingles or shakes over existing clapboard which is thought to be beyond economical repair has become popular. The irregular edge of shakes or shingles when applied in a "staggered" pattern, is unsympathetic to the original character of most older

buildings. If applied in even rows without the covering of original detail — (re: sills, cornerboards, etc.) shingle residing can be a successful solution though, by "thickening" the siding of the house by another layer, a loss of clarity of projecting detail is an inevitable result.

ASPHALT SIDING

In past years, asphalt was often chosen as a re-siding material and it was generally placed over a wooden clapboard surface. However, recently its popularity has declined and property owners are favoring synthetic siding materials such as vinyl and aluminum. Asphalt was chosen as a siding material for much the same reason as asbestos, now illegal to use under the present building code. Procedures for the removal of both materials are similar.

Removing these types of siding is a simple but dirty task. Necessary tools include a wrecking bar and claw hammer. First, the top layer should be pulled off to reveal the insulation board. This too should be removed together with any layers of tar or building paper. Removal of this material should expose the clapboards. At this point, be sure to remove all nails. The clapboards should then be patched, repaired or replaced as necessary. In addition each nail hole from the composition siding must be sealed with putty before paint is applied to the reclaimed clapboards.

SYNTHETIC SIDING

Despite its current popularity and, when properly applied, its appropriate appearance for older homes, it would be a mistake to endorse synthetic siding whole-heartedly. These are relatively new materials, yet to be tested for long-term success, and not without potential drawbacks.

The long term effects on the underlying wooden structure are not known. Wooden siding "breathes," allowing moisture caused by temperature differences on either side of the walls to escape gradually to the outside before it can build up and condense within the wall. Vinyl or aluminum siding may not have this quality. Thus rot or deterioration of wooden members can

become a problem. Furthermore, synthetic siding will hide such problems until they become severe. If you do use synthetic siding you must provide openings to vent the walls according to Federal Government standards.

Installing aluminum or vinyl siding requires a substantial initial investment and once installed the homeowner cannot change his mind without incurring considerable expense. The commonest rationale for installing synthetic siding is to avoid the task and expense of painting a building. However, it is important to note that this new type of siding may itself need painting after about 15 years. Further, the cost of maintaining synthetic siding, once painted, is not significantly less than that of wood clapboards. Remember too that you still have the annual maintenance chore of checking and recaulking where necessary all the sealant around the critical edges of doors, windows and cornices on your building.

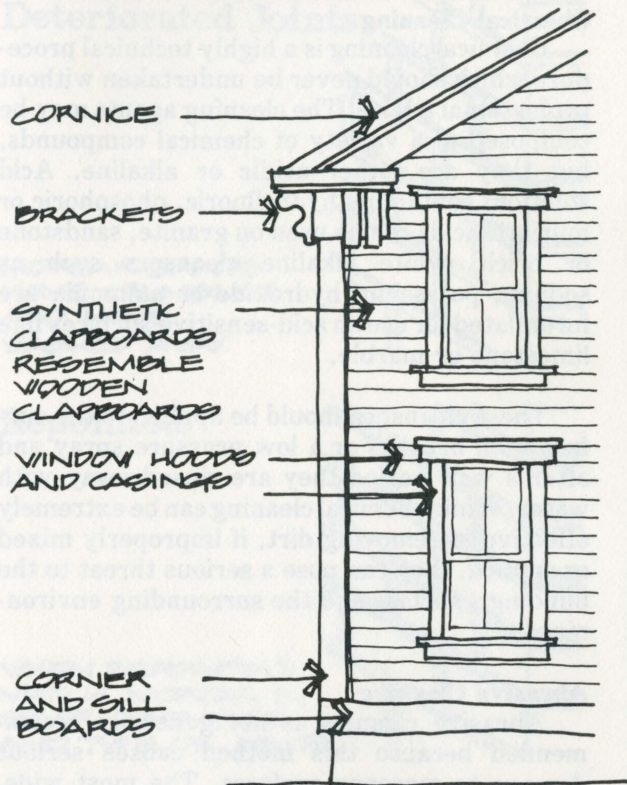
Another objection to synthetic siding, as mentioned in the Design Guidelines, is the potential loss of architectural detail when it is carelessly applied. Application of synthetic siding may also add to the expense of replacing roofing materials at a later date because it must be removed at the sides of dormer windows and above porch roofs to install new roof flashing.

Synthetic siding (and new composition siding as well) can create unsuspected fire hazards. In a fire, aluminum siding will act like an oven wall, holding in and intensifying the heat. Vinyl siding does melt, allow the heat to escape, and fire fighters to get at the fire; however, there is increasing evidence that vinyl emits poisonous gases as it burns. Synthetic siding, (and asbestos) can hide the path and direction of fire as it travels within the walls, with fatal results. These facts should be weighed carefully if you are contemplating covering the original siding of your home.

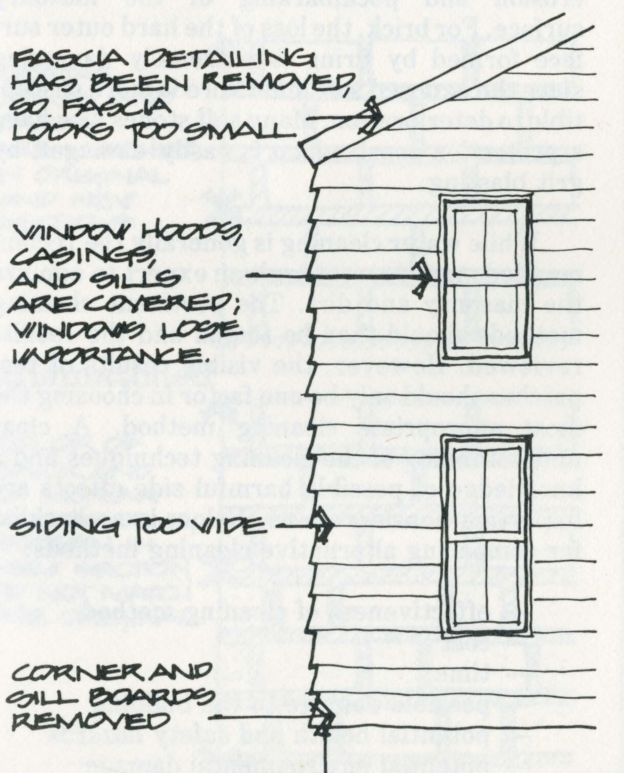
Energy conservation is an important issue today because of the current energy crisis. Many people assume that it is more expensive to heat an older home than a newer one. This need not be the case. Installing insulation and making leaky windows and doors tight can make a substantial difference.

The greatest heat loss in any home (over 80%) is through the roof, because warm air rises. It is unrealistic, therefore, to believe that the installation of aluminum or vinyl siding will substantially increase the heating efficiency of

IF USING SYNTHETICS, RETAIN ORIGINAL DETAILS



AVOID COVERING TRIM



your home. While it will help somewhat, the installation of standard insulation between wall studs and/or recaulking of exterior clapboards will be at least as effective, while the appearance of the building will be maintained at less cost. Six inches of insulation placed beneath the roof or in the attic floor will do more to save your heating dollars, and will help keep your home cooler in the summer. You can easily install such insulation yourself. Recaulking aluminum storm windows, weatherstripping wood windows and doors, and re-puttying each pane of glass in window sash are also well worth doing.

Wood has been the most traditional siding material in Lowell. Wood is easily worked, has natural insulating qualities, is adaptable, plentiful, relatively inexpensive and resistant to denting. It can be patched, refinished, and repainted or stained. And it has its own singular beauty. For all of these reasons every reasonable effort should be spent to keep the original siding on your home. If replacement is absolutely necessary, new wood clapboards will look better than any synthetic material and will, with care, last longer.

If you are considering changing the siding material on your home from the original, compare available alternatives carefully. The following list summarizes the basics.

Wood Clapboards:

- Always historically appropriate — can last over 100 years if kept up.
- Require painting every 5-10 years and minor periodic maintenance.

Wood Shingles (Not Shakes)

- Used originally on Shingle Style and Queen Anne Style homes; conditionally appropriate on homes of other styles—must be used with original trim.
- Can last to 100 years with maintenance.
- Require painting every 5-10 years and minor upkeep.

Vinyl or Aluminum Siding:

- Conditionally appropriate, if 4" horizontal "Boards" are used and original trim is retained.
- Life expectancy may be longer than wood clapboards, but long-term effects on structure beneath untested.
- May require periodic painting after 15 years; may dent or scratch; potential rot problems in structure behind; potential fire hazards.

Asphalt Shingle or Sheets, Asbestos Shingle, Formstone:

- All are inappropriate siding materials for older homes; Asbestos is illegal under present codes.

Masonry

If properly maintained, buildings constructed of masonry can last for centuries. Water is the primary cause of masonry deterioration but air pollutants, bird droppings, and rusted iron surface details also contribute to masonry decay. The best way to fight these forces is to keep the surface of the building clean.

There are four basic methods of masonry cleaning: (1) water cleaning; (2) steam cleaning; (3) chemical cleaning; (4) abrasive cleaning. Before any technique is chosen, consult an expert (easy to find in the yellow pages) to determine the composition of your masonry and if possible to analyze the dirt present on the surface. This information will help in deciding which cleaning materials and techniques are appropriate for your building. Next, we advise testing the cleaning materials and techniques on several patches located in an inconspicuous area of the building. Ideally, it is best to allow these patches to weather up to a full year so that the long-term effects can be gauged.

Water Cleaning

Water cleaning softens the dirt and rinses it from the surface. Water is sprayed on the building and the pressure is adjusted to suit the exterior surface. High pressure spraying (600-800 psi) should only be done on extremely hard masonry surfaces (marble, granite) while low and moderate washes (200-600 psi) should be applied to softer wall surfaces (brick, limestone). When lower pressures are used, the surface can also be hand scrubbed with bristle brushes. Never use wire brushes because they abrade the surface and deposit shavings which may cause rusting. Finally, never apply a wash if there is any possibility that the water will freeze before the saturated wall is **completely** dried.

Wash techniques require little equipment and, if properly done, neither the building nor the environment is adversely effected. While problems can arise if water seeps too far into the walls, overall this method is recommended. The cost is relatively low, there are few negative side effects and the results are generally good.

Steam Cleaning

Although once quite popular, steam cleaning is now used less and less. Steam is generated in a flash boiler then applied to the surface through low pressure (10-30 psi) nozzle. While this technique minimizes the possibility of water damage,

the equipment is expensive and hazardous to operate and the process is extremely slow.

Chemical Cleaning

Chemical cleaning is a highly technical procedure which should never be undertaken without professional advice. The cleaning agents may be composed of a variety of chemical compounds, but they are either acidic or alkaline. Acid solutions containing hydrofluoric, phosphoric or muriatic acids can be used on granite, sandstone or brick, white alkaline cleansers such as sodium, potassium hydroxide or ammonia are formulated for use on acid-sensitive surfaces like limestone or marble.

These cleansers should be applied to the surface with brushes or a low pressure spray and after a wait period they are rinsed away with water. While chemical cleaning can be extremely effective in removing dirt, if improperly mixed or applied, they can pose a serious threat to the building's surface and the surrounding environment.

Abrasive Cleaning

Abrasive cleaning is not generally recommended because this method causes serious damage to masonry surfaces. The most widespread abrasive cleaning technique is sand blasting. Typically, the process involves an aggregate of silica sand propelled by a high velocity stream of air at 20 to 100 psi against the masonry surface. The scrubbing action of the air/abrasive jet removes dirt but also causes erosion and pockmarking of the masonry surface. For brick, the loss of the hard outer surface formed by firing is extremely damaging since the exposed soft inner core is more susceptible to deterioration. Many soft stones also have a protective crust which is easily damaged by grit blasting.

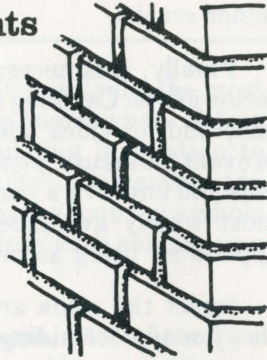
While water cleaning is generally the recommended procedure, consult an expert to analyze the masonry and dirt. The pertinent cleaning methods should then be tested and the results reviewed. However, the visible results of test patches should only be one factor in choosing the most appropriate cleaning method. A clear understanding of the cleaning techniques and a knowledge of possible harmful side effects are important considerations. Below is a checklist for comparing alternative cleaning methods:

- effectiveness of cleaning method
- cost
- time
- possible damage to the building
- potential health and safety hazards
- potential environmental damage

REPOINTING BRICK

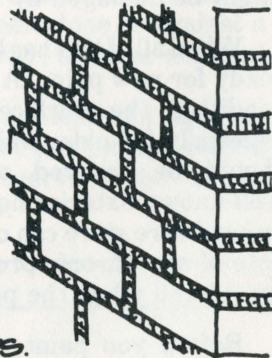
Deteriorated Joints

MORTAR JOINTS
HAVE CRUMBLED
AND HAVE
WASHED AWAY.



Repointed

WHEN REPOINTING,
MATCH MORTAR IN
COLOR AND SIZE
AND TYPE OF JOINTS.



Although extremely durable a masonry surface can deteriorate considerably with weathering and lack of periodic maintenance. Repointing is a weather-proofing technique extremely important to masonry maintenance. Lime mortar joints generally deteriorate more rapidly than masonry units. Periodically it is necessary to point or repair these joints to insure that a building remains sound and weatherproof.

Repointing begins with removal of old, loose mortar from the joints. Carbide blades and power chisels are often used for this work but there will be less chance of damage if only hand tools — a hammer, cold chisel, or in the case of very soft mortar, a hard-wood chisel are used. The old mortar should be removed to a depth of $\frac{1}{2}$ " to $1\frac{1}{2}$ ". Loose particles should then be flushed from the joint with a water spray to insure a proper bond to both the masonry and the old mortar.

There are three things to consider when repointing:

(1) Mortar Composition — mortar is composed of lime, cement and sand. Always consult an expert to determine proportions appropriate for your building.

(2) Color — Always match the color of the old mortar composition. Early (1700-1850) mortars were rarely pigmented, but rather had a sandy color. Avoid the standard light grey cement and instead use a white cement in your mortar mixture if you own an early building. Mid-to late-nineteenth century buildings were often pointed with colored mortar. Sometimes these colors can be reproduced by simply adding a little brick dust to the mortar.

(3) Joints — Finishing or tooling the surface of the new mortar to match the original joints is also important when repointing. Generally mortar joints are either flush with the building surface or slightly concave.

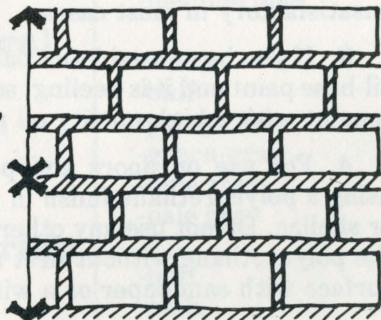
In some cases the bricks themselves and not just the mortar are severely damaged and may need to be replaced. To match old and new brickwork, keep in mind these guidelines:

- 1.) The new brick should match the old in color, size and texture. Many manufacturers offer waterstruck bricks, while salvage yards are also good places to look for replacement bricks. If you do use old bricks, always chip off any mortar and clean off any dirt or paint before laying them.
- 2.) Bricks when laid are arranged in a pattern or bond. The most common bonding patterns are English, Flemish and Common Bond. For a description of these patterns see the glossary under "Bond".

REPLACING BRICK

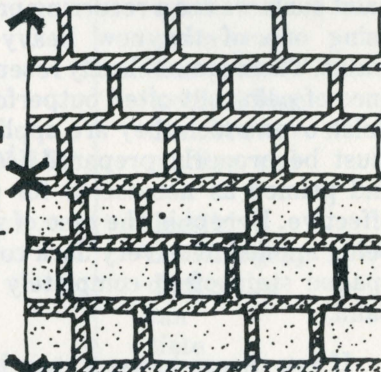
Good Match of Old and New

MORTAR,
JOINTS, AND
BRICKS
ARE MATCHED
IN ORIGINAL
AND NEW
SECTIONS



Mismatched

COLOR OF
BRICK AND
OF MORTAR
AND BONDING
PATTERN IN
NEW SECTION
DO NOT MATCH
THE ORIGINAL.



Painting

Once repaired, clapboard siding must be inspected and repaired on a routine basis. All surfaces should be patched as needed and painted about every five years. While painting is a relatively easy job, it is surface preparation that requires time and effort.

Before repainting, everything must be clean and free of loose paint and dirt. Examine the present condition of all painted surfaces as this will help to identify problem areas. The two most common paint problems are blistering and cracking.

Blistering indicates a presence of moisture under the paint. As this dampness comes to the surface, the paint above it develops small, irregular and loose flakes. Blistering is often cured by ventilating the air-space between outside and inside walls. The homeowner can insert small ventilator plugs into paint-blistered areas of siding. The only work required is the drilling of several holes large enough to accommodate the ventilators. The louvered plugs are coated with waterproof cement and are simply pushed into the holes. (See siding.)

Sometimes moisture from a damp leaky basement penetrates wall cavities and causes paint blistering. If the basement is suspected, its walls and floors should be repaired and sealed.

Cracking is caused by insufficient paint adhesion. This condition generally occurs for one of two reasons: either incompatible paint types were used or paint was applied to a dirty, greasy or previously cracked surface. Paint applied in cold or wet weather is also susceptible to cracking. Such areas must be scraped thoroughly, then sanded and wiped clean. Several coats of priming paint should precede the finish coat.

Proper surface preparation usually involves scraping and sanding. For the best effect use a wire brush for scraping. However, if an area is extensively blistered or cracked, most of the underlying paint should be removed. This can be done with chemicals, by applying heat or using a propane torch. Use only enough heat to soften the paint so that it can be pushed away with a putty knife. Beware of the fire hazard and avoid burning the wood. After treatment with torch and putty knife, the surface should be thoroughly scraped and sanded.

Before applying paint, other routine main-

tenance is necessary. Loose clapboards should be renailed. Reputty and sand nail holes and minor cracks.

Finally, it is necessary to caulk various exterior joints. Caulking is very inexpensive insurance and provides added protection for it will prevent moisture penetration, reduce heating bills and improve a home's appearance. Caulk is most widely available in tube form, which is applied by using an inexpensive caulk gun.

Inject the caulk around window frames, at the junction of siding and foundation, at the corner boards and in general, at any joints which might be damaged by moisture penetration.

When all of this has been done, the building is ready for new paint. A coat of primer paint will condition the surface and is recommended especially for older buildings. Clapboard siding should be covered with a good grade of well-known exterior housepaint. A paint dealer or hardware store can offer helpful advice. Take note of any chronic problems so that these are considered when the paint is purchased.

Before you paint, consult the color chart, then follow these guidelines for the best results:

1. Once you have determined what color to paint, prepare your exterior surface carefully.
2. Always use an oil-base paint over oil-base paint when repainting. The oil in the new paint "feeds" the old coat and helps it to adhere. Applying water-base paint on wood that has been painted with oil-base for years will prove unsatisfactory in most cases.
3. If you have used latex paint over original oil-base paint and it is peeling, scrape, sand, and repaint with a high quality oil paint.
4. For use on doors and porches consider using a polyurethane finish in place of varnish or shellac. Do not use any other finish on top of the polyurethane without first roughing up the surface with sandpaper or a wire brush.
5. When cracking, peeling, and blistering paint surfaces are a recurring problem, consider using one of the new heavy-bodied opaque stains. These stains closely resemble the appearance of paint but often outperform the painted finish over which they are applied. The surface must be properly prepared (scraped, sanded, and primed as necessary) for the stain to be effective. Except in the case of very light colors being applied over very dark colors, one coat of opaque stain often completely covers the old paint.

If you choose to use a stain be sure to follow the manufacturer's instructions carefully.

Color

The choice of color is without doubt the most personal decision facing the homeowner. Before painting, consider your building in relation to other buildings on your street. Remember the color of your building can set the tone for a whole street and either blend or clash with neighboring structures.

In choosing a color scheme, keep these tips in mind:

- Avoid using too many colors. Color has its greatest clarity when seen alone or against a background of white, gray, black or a muted tone.
- Wall color dominates a building's appearance. It is generally best to choose a muted tone for the walls, reserving the bright colors for trim features.

Use of color varies with each building period. The chart below lists the base and trim colors popular in each stylistic period covered in this handbook. Base colors are indicated for exterior wall surfaces; trim colors are for use on features or details.

If you are concerned with historic accuracy, or simply are interested in knowing what color your building was originally painted here are two easy steps to follow:

1. To determine the approximate original base color of your building scrape carefully a protected clapboard or shingle on the northern exposure. Remember that time and chemical reactions may have grayed or bleached the original shade of the base color.
2. Wet the sample shingle or clapboard with water to determine more accurately the original base color. Make sure you scrape all the way to the first coat of paint. Often three or four paint layers will cover an original tone.

COLOR CHART

	Wall Color	Trim Color	Door Color
Federal	-pale yellow -off white -soft beige -pale green -medium gray -medium blue	(lighter than base color) -white -buff -pale yellow -medium blue	-black -natural
Greek Revival	-white -buff -pale yellow -green-gray -blue gray -pale gray	-olive green -gray-blue -green black -buff -white -black	-dark green -medium blue -black
Early Victorian	-buff -pink -light gray -ochre -green-gray -blue-gray -medium blue -dark brown -medium red	(darker than base color) -black -chocolate -red -dark gray -dark green -dark brown	-oak, frequently unpainted wood
High Victorian	-deep blue -medium gray -dark ochre -tan -slate	-golden yellow -dark gray or green black -medium or dark brown -beige -red -olive green	

Roofing

As the feature which primarily protects the house from the elements, a roof is constantly exposed to deteriorating forces. Often roof leaks will not show until after much internal damage has occurred. Therefore, it is always best to inspect your roof periodically for missing or cracked pieces. When checking, pay particular attention to the southern exposure. This section of a roof tends to deteriorate the fastest because the hot sun breaks down the asphalt composition or it may dry out the wood shingles causing cracks which moisture can then penetrate.

Traditional roofing materials include wood cedar shingles or shakes, sheet metal, and, during the Victorian era, slate tiles. In many cases the original roof is intact although individual pieces may have cracked or blown off. Often it is possible to repair a roof using original materials. For instance, individual slate tiles found on Mansard buildings can be repaired with asphalt cement or replaced if missing.

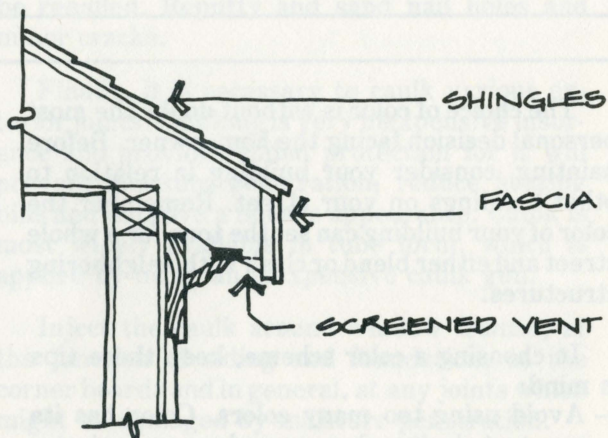
When the whole roof must be replaced, care should be taken to choose the proper materials and color. While traditional materials would be appropriate today on certain types of homes, the Lowell building code prohibits the use of untreated wood shingles. Treated shingles are available and are suitable for most of Lowell's older homes. Asphalt shingles (inappropriate for walls) are acceptable for most roofs as they are rot and fire resistant, inexpensive, and can be similar in their spacing to wood shingles and slate.

When installing a new roof, be sure to provide roof or gable vents. These will ensure proper ventilation and extend the life of the roofing surface. Without these vents, a roof tends to deteriorate prematurely as heat builds up beneath the surface.

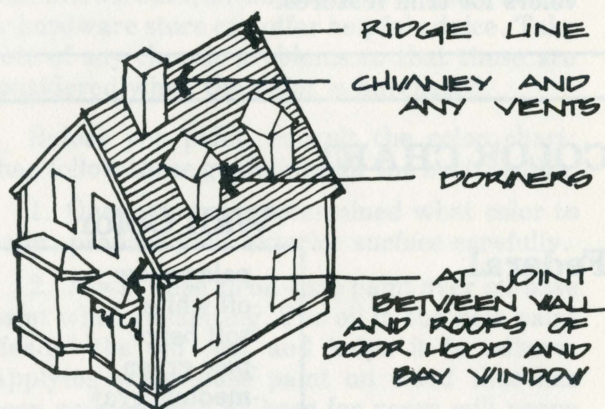
Keep in mind that labor amounts to the biggest part of the roofing costs, so it is well worth using the best materials available to extend the effective life of the roof.

The most vulnerable part of any roof is at the edges where it meets the chimneys, sewer vents, cornices, etc. To protect these vulnerable areas it is necessary to install flashing and gutters which redirect the flow of water away from potential trouble spots.

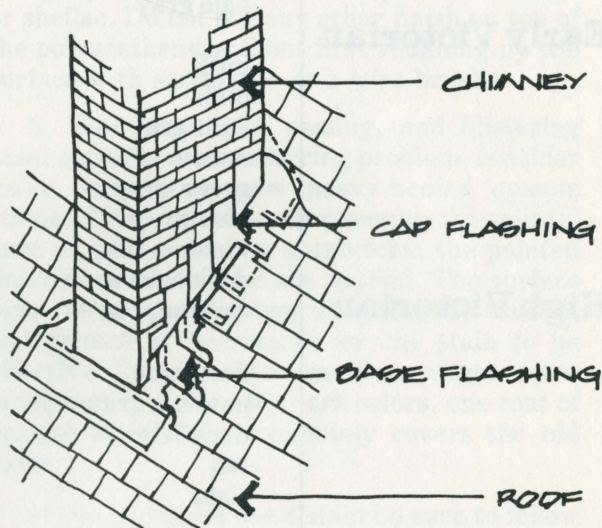
VENTING A SLOPED ROOF



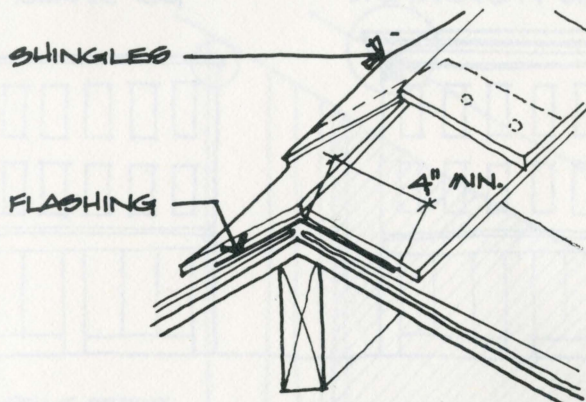
WHERE TO FLASH



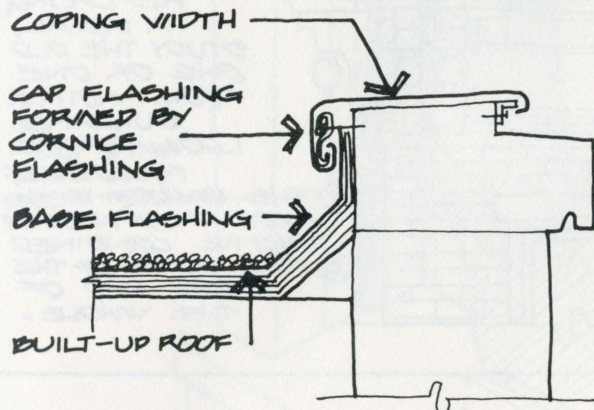
CHIMNEY FLASHING



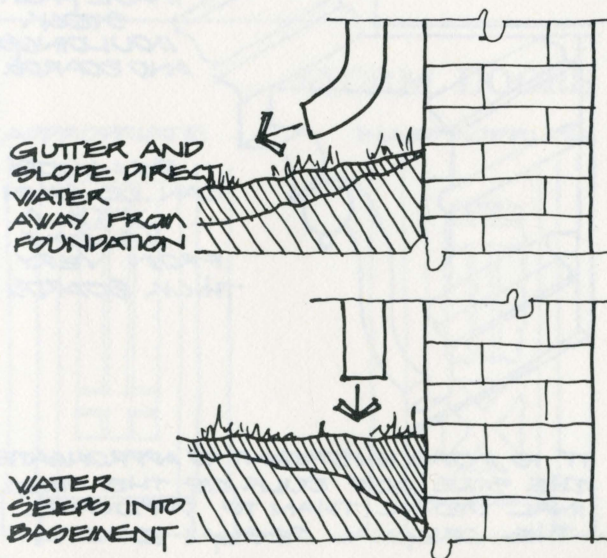
RIDGE FLASHING



CORNICE FLASHING



DRAINAGE AT FOUNDATION



Flashing

Flashing is the term given to a procedure which involves placing thin strips of metal (generally aluminum) around the vulnerable areas of a roof. Usually, these trouble spots are found where vertical elements penetrate the surface of a roof, i.e., chimneys, dormers, vent-pipes, and in places where the roof intersects with other parts of the building.

Several types of flashing are illustrated at left. For example, flashing around chimneys is a two-part job. First, there is base flashing which must be fit into the shingles. Next, the cap must be flashed and the metal should be built into the brickwork as the chimney is laid. One piece of base flashing should be used for each course of shingles and it should extend onto the roof surface at least four inches.

Always remember that nails driven into the lower portion of the flashing should be embedded in lead washers to prevent leakage. After the flashing is installed, apply liquid tar along the edges of the flashed surfaces for added protection.

Gutters

The roof should be checked each spring and the gutters cleaned of all dirt and leaves. Gutters direct rain off the roof and into the downspouts. If clogged, water will spill down the wall and soon stain and deteriorate cornices and siding.

Hung below the eaves, gutters will become heavy when filled with ice, and should be supported every 30" to prevent sagging or collapse. Since metal will expand and shrink with changes in temperature, room must be left to allow them to expand free of their supports. Gutters must slope down about one inch for every 16 feet of length to insure proper drainage. Be sure to install a screen at the downspout opening to keep leaves out. If aluminum gutters and downspouts are used, try to find a dark colored anodized or baked enamel finish which blends well with the colors of your house.

Details

TRIM

It is the extra touch of a hand-carved roof cornice or a carved bracket on a door hood that makes older buildings so attractive and distinctive. Every effort should be made to retain these details that give special character to a building.

Loose trim may be refastened by carefully drilling a hole, countersinking, and screwing the trim back on. The countersunk hole can be filled in and painted.

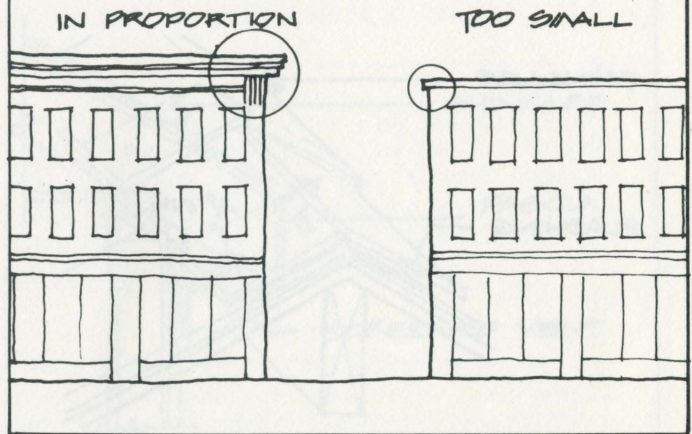
New synthetic materials make it now possible to preserve and recondition partially-rotted wood details and ornaments. Epoxies, polyesters and other synthetic resins are readily available and can be used for filling and shaping to repair details and to build up partially-rotted areas of your building.

Cracked doors can be dismantled and re-laminated, missing brackets can be moulded, and balusters can be repaired and reglued with no fear of the patches becoming loose in rain or dampness, because these synthetic resins are waterproof. Some of these resins allow partially rotted wood to regain its strength through impregnation. This is done by drilling holes in the end-grain and soaking the wood through the holes. When the resin hardens, the wood is often tougher than it was originally.

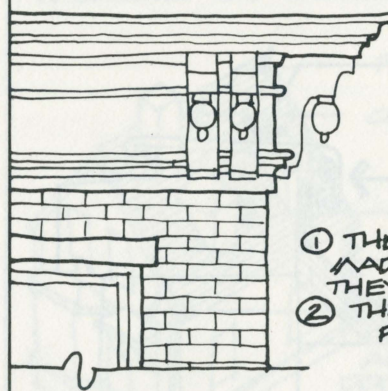
If trim is beyond repair or entirely missing, it can be duplicated closely with a portable jigsaw and drill using standard sizes of white pine lumber. If you can't match it exactly, try to duplicate the mass and rhythm of the original. Seemingly complex details can be built up from simple pieces. When dismantling a complex element, such as a bracketed cornice (see drawing) for repair, note how it was put together originally. Sketches or photographs will be especially helpful when you make replacement parts.

If you cannot or do not wish to attempt to re-work trim yourself, a local carpenter or wood-working firm may be able to repair or duplicate it. Whether you do the work yourself or have it done, the effort will be a worthwhile investment in the total value of your property.

SIZE OF DETAILS



STUDY THE DETAIL

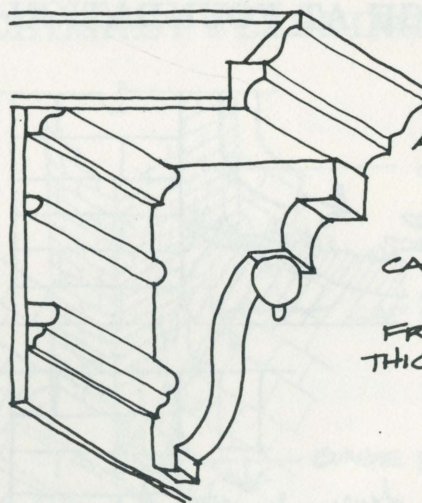


WHEN REPLACING A DETAIL, STUDY THE OLD ONE OR ONE FROM ANOTHER BUILDING. LOOK FOR THE

FOLLOWING:

- ① THE PARTS IT IS MADE FROM AND HOW THEY'RE COMBINED
- ② THE SIZES OF THE PARTS AND OF THE WHOLE.

FABRICATE A REPLACEMENT

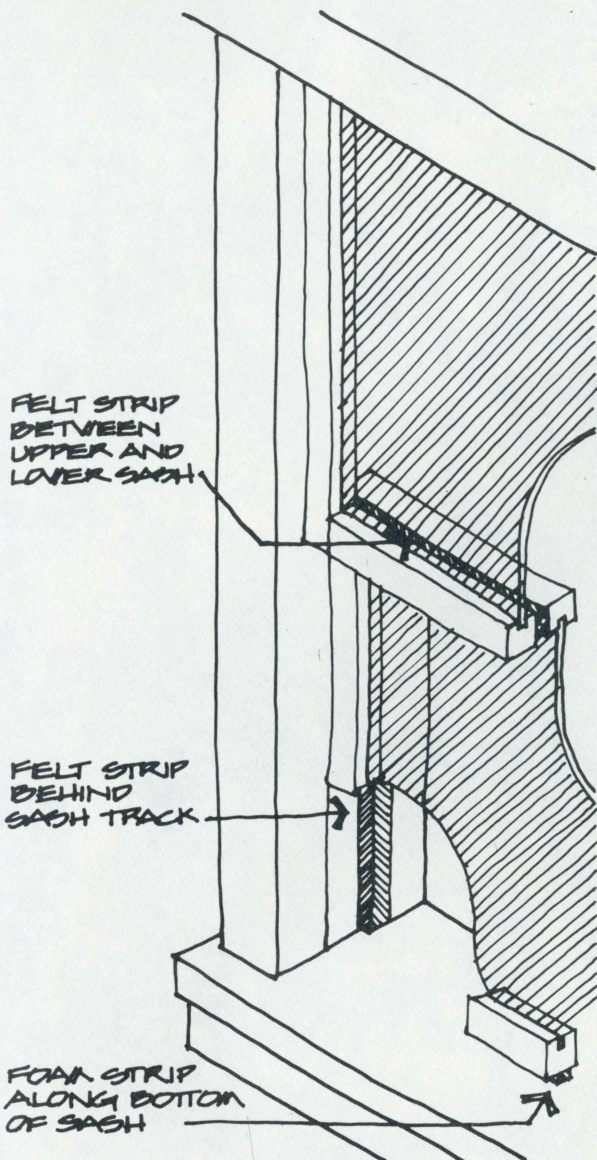


CORNICES CAN BE MADE FROM STOCK, MOULDINGS AND BOARDS.

BRACKETS CAN BE SAWN WITH A JIG SAW FROM VERY THICK BOARDS.

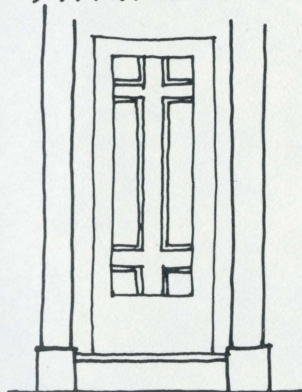
IT IS MORE IMPORTANT TO APPROXIMATE THE SIZE AND BULK OF THE ORIGINAL DETAIL THAN TO DUPLICATE THE ORIGINAL DESIGN EXACTLY.

WEATHERSTRIPPING

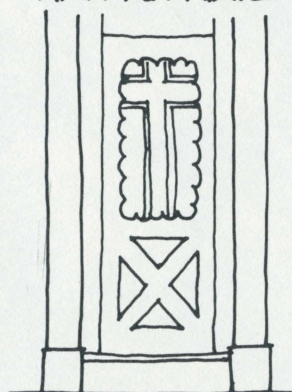


STORM DOORS

APPROPRIATE



INAPPROPRIATE



WINDOWS

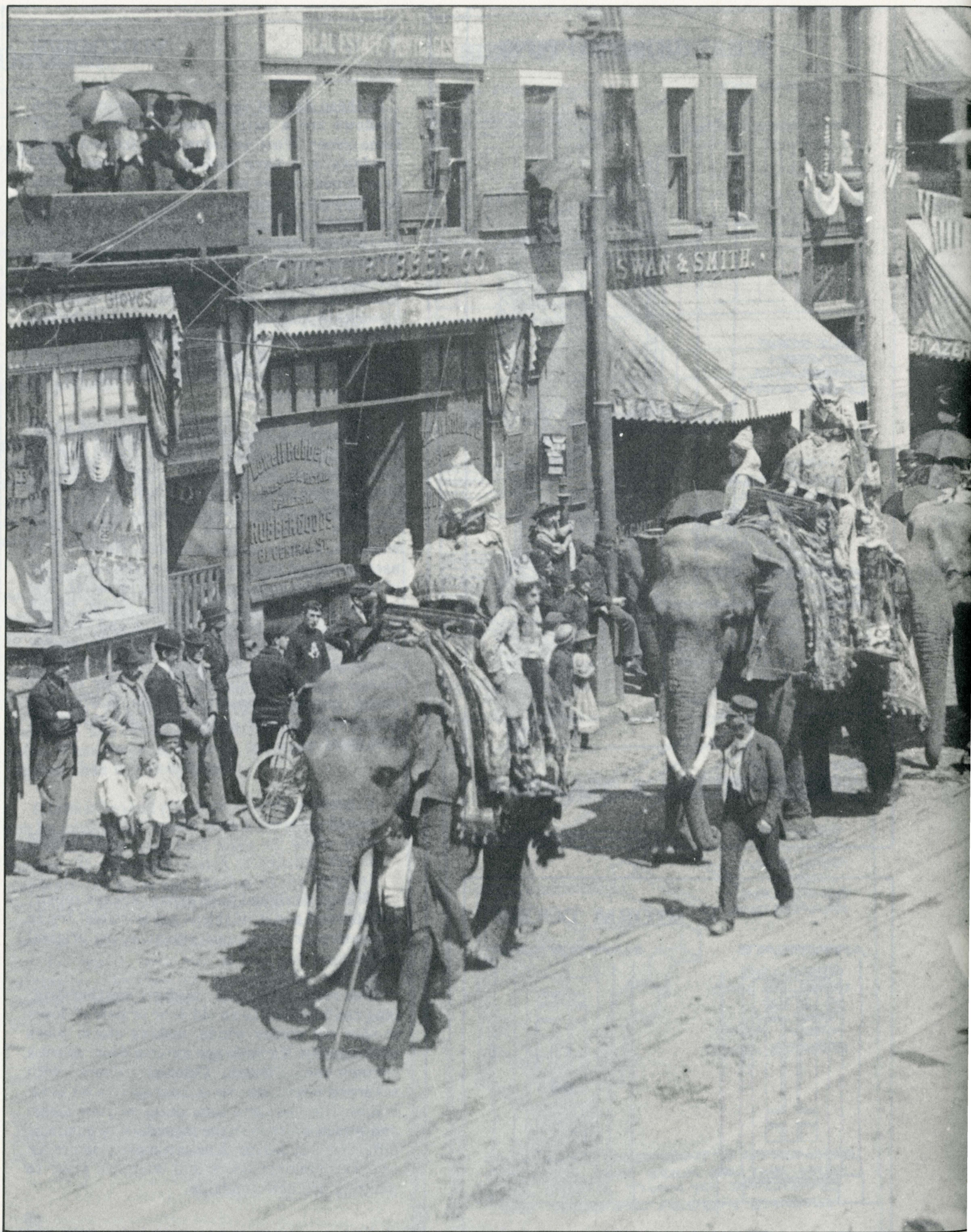
In these days of energy conservation, storm windows are a natural consideration for any home owner. Wood and aluminum-framed storm windows both have certain advantages. However, wood frames are preferable because they can be built to match the size and number of sash lights of the interior window. Wood frames also provide better insulation when felt weatherstripping is applied on the inside face of the wood storm window. Metal frames are usually constructed with one over one sash which is historically inappropriate for houses built before 1850. They also tend to transmit the coldness of the outside air. If, however, aluminum storm windows are installed, use caulking on the inside of the frames.

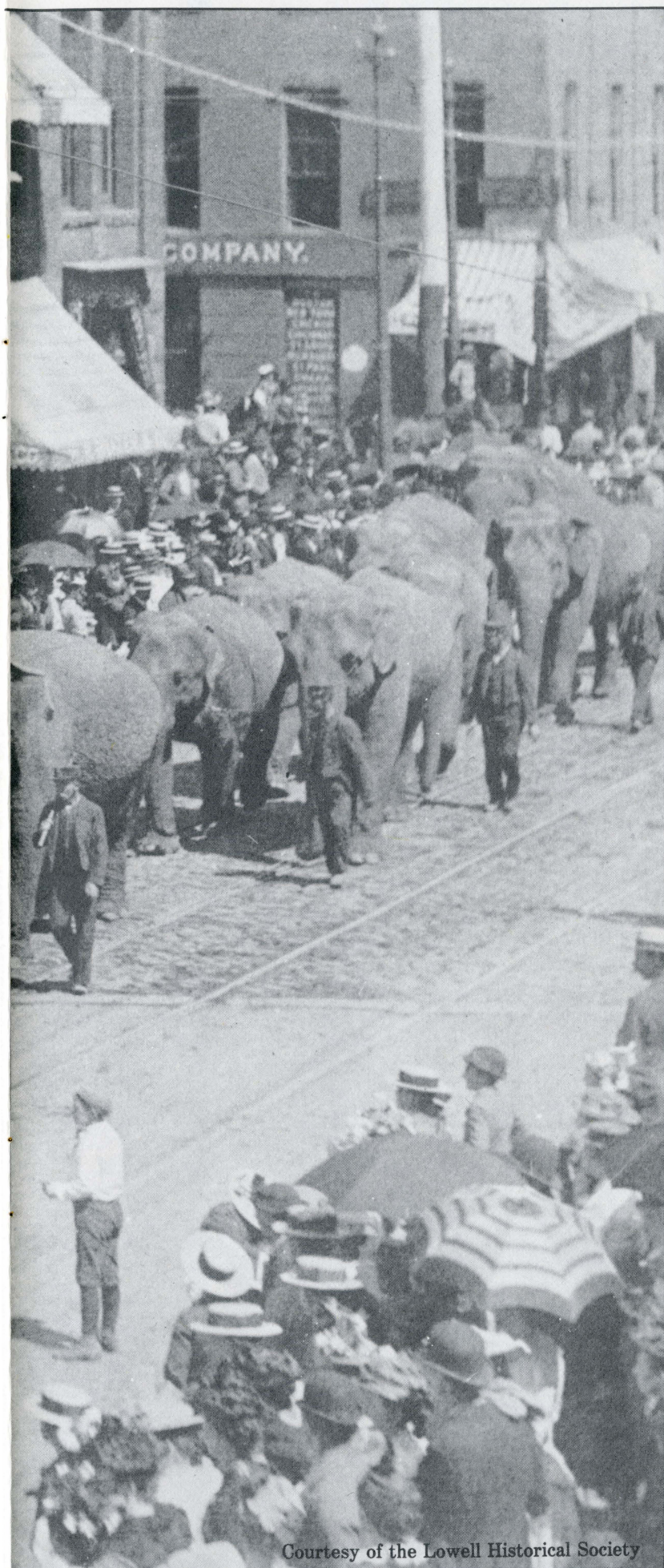
In choosing and applying storm windows, care should be taken to make them look as inconspicuous as possible. Storm windows should never have divisions which conflict with the divisions of the interior sash. Have storm windows custom made to fit odd-shaped windows, such as arched windows. Never try to use a standard window and cover the remainder of the window opening with wood or metal. The color of storm sashes and frames should match that of the inner window muntins and casings. Raw aluminum frames should be avoided except where trim color is light gray. Some aluminum frames come pre-painted. If the color doesn't match, purchase unpainted aluminum windows, prepare the surface, prime with zinc chromate, and paint.

DOORS

When an original door exists, always repair, refinish and use it. If this is not possible, try to buy a new or used replacement in the original style.

For reasonable cost, modern weatherstripping can be added to an old door or pair of doors to shut out winter winds, making storm doors unnecessary. If you do use a storm door, select a simple one. "Dutch Colonial" doors with scalloped edges are never appropriate on older homes. Use the same color paint on your storm and screen doors as on the main door to minimize differences in design. Zinc chromate primers for use on aluminum doors and windows prior to painting are now available.





Courtesy of the Lowell Historical Society

APPENDIX

Glossary

Bay....External divisions of a building marked by window placement or other vertical elements.

Bay Window....A projecting bay extending to the ground level that forms an extension to the interior floor space. If curved, also called a bowfront. If the projection extends from an upper story, the proper term is **oriel window**.

Bond....The method used to hold thick brick walls together. **English bond** is an arrangement which alternates one row of bricks placed end out with another row of bricks placed side out. **Flemish bond** is an arrangement which alternates a brick placed sideward with a brick placed lengthwise within the same row. **Common bond** uses staggered rows of brick, each row with all bricks side out.

Bracket....A small projection, usually carved decoration which supports or appears to support a projecting cornice or lintel.

Clapboards....Narrow, horizontal, overlapping wooden boards that form the outer skin of the wall of many wood frame buildings. These boards are generally 4"-6" wide.

Column....A vertical shaft or pillar that supports or appears to support a load. (See Order)

Corner Board....A narrow vertical board at the corner of a wood frame building.

Cornice....Any projecting ornamental molding along the top of a building or wall.

Dentil....Small square blocks generally used in a row to ornament cornices.

Dormer....A window with a roof of its own that projects vertically from a sloping roof.

Elevation....A "head-on" drawing of a building facade or object, without any allowance for perspective. An elevation drawing will be in a fixed proportion to the measurement on the actual building.

Facade....The front face or elevation of a building.

Fascia....A flat vertical board that forms the face along the edge of a flat roof or along the horizontal or "eaves" side of a pitched roof.

Fenestration....The arrangement of windows.

Keystone....The wedge-shaped piece at the top of an arch.

Lights....Openings between the mullions of a window, usually glazed. (See Window Parts)

Lintel....A horizontal beam over an opening. May be decorative or may carry load of the structure above.

Molding....A decorative band or strip of material with a profile. Generally used on cornices and as trim around window and door openings.

Order....In classical architecture an order consists of a Column or shaft (with or without a base) its Capital, or head, and the horizontal Entablature. These were proportioned and decorated according to certain modes — the most common ones were established by the ancient Greeks — the Doric, Ionic and Corinthian. The Romans later modified these orders slightly. Most of the "classical" details found in nineteenth century buildings are modifications of the Roman details.

Pediment....The triangular space formed by the two slopes of a gable roof. Also, a triangular cap sometimes used as decoration over a door or a window.

Pilaster....A flat-faced or half round column which appears as if embedded in the surrounding wall and which projects slightly from it.

Sill....The lower horizontal part of a door or window frame or the bottom horizontal board on a wall.

Transom....A horizontal crossbar in a window, over a door, or between a door and window above it. Also refers to a window above a door or other window built on and often hinged to a transom.

Window Parts....Sash is the term given to the moving units of a window which are placed in a fixed frame. The sash may consist of one large pane of glass or it may be subdivided into smaller panes by thin members called muntins.

Bibliography

Bicknell, A.J. and Comstock, W.T.O., **Victorian Architecture: Two Pattern Books**. Watkins Glen, New York: American Life Foundation, 1975.

Bullock, Orin M. Jr., **The Restoration Manual: An Illustrated Guide to the Preservation and Restoration of Old Buildings**. Norwalk: Selvermine Publishers, 1966.

Condit, Carl W., **American Building Art: The Nineteenth Century**. New York: Oxford University Press, 1960.

Condit, Carl W., **American Building Art: The Nineteenth Century**. New York: Oxford University Press, 1961.

Coolidge, John, **Mill and Mansion: A Study of Architecture and Society in Lowell, Massachusetts**. New York: Columbia University Press, 1942 (reissued, Russell and Russell, Division of the Atheneum House, 1967).

Courier Citizen Company, **An Illustrated History of Lowell and Vicinity**. Lowell: Courier Citizen Company, 1897.

Dietz, Albert J. H., **Dwelling House Construction**. Cambridge: M.I.T. Press, 1954.

Gettens, Rutherford J., and Strout, George, **Painting Materials: A Short Encyclopedia**. New York: Dover Reprint, 1966.

Gladstone, Bernard (ed), **The New York Times Complete Manual of Home Repairs**. New York: MacMillan Publishing Co., Inc., 1966.

Greater Portland Landmarks, Inc., Advisory Service, **Some Notes on Living with Old Houses**, Revised. Portland: Greater Portland Landmarks, Inc., 1974.

Hamlin, Talbot, **Greek Revival Architecture in America**. New York: Oxford University Press, 1944 (reissued 1964).

Harrity, Michael H., and Hansen, Janet L., **Masonry Conservation Technology**. Charlestown, Massachusetts: Massachusetts Masonry Institute, 1976.

Hitchcock, Henry Russell, **Architecture of the Nineteenth and Twentieth Centuries**. Baltimore, Maryland: Penquin Books, Inc., 1958.

Little, Nina Fletcher, "Finding the Records of an Old House." Boston: **Old Time New England**, Vol. XL, No. 2, pp. 47-56 (October 1949).

Maass, John, **The Gingerbread Age**. New York: Rinehart and Co., 1975.

National Slate Association, **Slate Roofs**, Third Edition. New York: National Slate Association, 1953.

National Trust for Historic Preservation, **Finishing Touches**. Washington, D.C.: National Trust for Historic Preservation, 1963.

New York Historical Association, **Selective Reference Guide to Historic Preservation**. Cooperstown, New York: New York Historical Association, 1966.

Old-House Journal Corporation, **The Old-House Journal**. Brooklyn, New York: The Old-House Journal Company. (Subscription \$12/year, c/o The Old House Journal, 199 Berkeley, N.Y., 11217.)

The Old-House Journal Corporation, **The Old-House Journal Buyer's Guide**. Brooklyn, New York: The Old-House Journal Company, 1975.

Parker, Margaret, **Lowell, A Study of Industrial Development**. Port Washington, New York: Kennikat Press, 1970.

Phillips, Morgan, "The Eight Most Common Mistakes in Restoring Historic Houses (...and How to Avoid Them)." **Yankee Magazine** (December, 1975).

Saylor, Henry H., **Dictionary of Architecture**. New York: John Wiley and Sons, Inc., 1963.

Stephen, George, **Remodeling Old Houses Without Destroying Their Character**. New York: Alfred A. Knopf, 1973.

Whiffen, Marcus, **American Architecture Since 1780**. Cambridge, Massachusetts and London, England: M.I.T. Press, 1969.

Williams, Henry L. and Williams, Ottalie K., **A Guide to Old American Houses, 1700-1900**. New York: A.S. Barnes and Company, Inc., 1967.

Funding Available

I. For Residential Buildings

To determine location and eligibility, contact the neighborhood preservation program of the Division of Planning and Development (DPD).

A. Concentrated Housing Rehabilitation Program

1. Eligible areas: part of Lower Belvidere, Lower Highlands, the Acre, the Flats.
2. Guidelines: must be owner-occupants. Maximum Grant-\$3,500.00. Grant awards will be based on the individual's taxable income.

B. Neighborhood Housing Rehab Prog.

1. Eligible areas: parts of Centralville, Lower Pawtucketville, Beaver Brook Area, Lower Belvidere, South Lowell, Lower Highlands, the Acre and Middlesex Village.
2. Guidelines: Maximum Grant \$2,000.00. \$2,000.00.

C. Section 312 Rehabilitation Prog.

Unavailable at this time.

II. For Residential and Commercial

A. National Register Grant Program

Owners of property listed on the National Register of Historic Places may apply for grants to rehabilitate their property. Information on this program is available at the Historical Commission of the City of Lowell.

III For Commercial Buildings

A. Downtown Facade Program

1. Eligible area: Central Business District.
2. Guidelines: Grants range from \$4,000.00 or 25% of written estimate whichever is less. Owner must have clear title to property. Proposed work must be approved by the D.P.D.
3. Information on this program available from the Housing Director of the D.P.D.

B. Tax Reform Act of 1976

This act has implications for owners of older commercial buildings. The Act provides for tax benefits similar to those of new construction when renovation work is certified by the National Park Service. For information contact the State Historical Commission.

Municipal Contacts

Building Inspector	
William Brophy	454-8821
Community Development	
John Tavares	459-6138
Health Department	
Donald Cox	458-6836
Historical Commission	
Robert Malavich	459-6138
Neighborhood Preservation Program	
Robert Leary	459-0154
Zoning	
Donald Samowski	459-6138
Urban Design	
Robert Malavich	459-6138
Superintendent of Wires	
Charles Kelleher	454-8821
Planning and Development	
Robert Gilman	
Assistant City Manager	459-6138

Postscript

The initial printing of Lowell, the Building Book has resulted in the rehabilitation of two dozen commercial facades in the downtown and a multitude of residential properties throughout the City.

It is the hope of this Office, that this publication will continue to foster quality rehabilitation of our rich architectural resources.

Robert R. Gilman, Director
Division of Planning and Development

